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MULTIPLE SPECIFIC NUTRITIONAL DEFICIENCY DISEASE IN THE ADULT

RUSSELL L. HADEN, M.D.

CLEVELAND

The fact that disease may result from the lack of something has been appreciated only recently. Up to fifty years ago all disease was ascribed to tumors, microbes, poisons or other pathogenic agents. Then cretinism and myxedema were recognized as manifestations of a deficiency in thyroid secretion, and in 1891 thyroid extract was used as replacement therapy. Now many symptoms and syndromes are known to result from defects in secretion of the endocrine glands. More recently symptoms due to a deficiency in specific factors in nutrition have been recognized, so that the group of negative diseases has been greatly enlarged. An insufficient intake of all food results in malnutrition, but with the exception of edema due to a low blood protein content a deficiency in protein, fat and carbohydrate causes no specific signs or symptoms. The mineral salts are vital for all animal life. Each salt probably has a specific function, although a deficient supply only of calcium, iron and iodine is associated with a characteristic clinical picture. A deficiency in calcium may cause tetany, and a deficiency in iodine, a goiter. A deficiency in iron is much more frequently followed by clinical symptoms than is a lack of other inorganic substances, since the reserve store in the body is small and anemia quickly develops if the supply is not sufficient.

With the discovery of the vitamins and the demonstration that they are essential to normal nutrition, signs and syndromes due to a deficient supply of these specific elements have been recognized. The mineral salts and vitamins must be taken into the gastro-intestinal tract, since the human body is unable to manufacture vitamins as well as mineral salts. Certain necessary and specific factors in nutrition represent an alteration of food elements in the gastro-intestinal tract. The pernicious anemia preventive factor is thus formed by the interaction of something supplied by the stomach, the intrinsic factor, on something supplied by the food, the extrinsic factor. The lack of the nutritional factors so formed may also lead to deficiency disease. One must consider then as specific nutritional deficiency disease the abnormalities arising from a lack of the specific elements in nutrition which are normally supplied by the food or are formed directly from the food in the gastro-intestinal tract. The field of deficiency disease is developing rapidly. In the present state of our knowledge the more important specific substances the lack of which leads to nutritional defects in the adult are (1) calcium, (2) iron, (3) vitamins A, B, B_2 (G) and C, and (4) the anti-pernicious anemia factor. These factors are summarized in table 1, together with the specific function that is altered in the adult if a deficiency occurs.

Since the specific nutritional elements are necessary either to maintain the integrity or to support growth and function of certain tissues, the lack of these elements should be manifested by definite symptoms or structural defects. Certain clinical syndromes have been set apart as deficiency diseases, as pellagra, beriberi and scurvy. Such conditions, however, usually represent extreme deficiencies which occur in a minor form with much greater frequency. Symptoms and signs referable to a deficiency of the different nutritional elements often overlap, and a deficiency in one factor may initiate or influence a deficiency in other factors. Many different organs and tissues may be affected by a lack of the specific factors. It is more correct to consider clinical deficiency symptoms as deficiency "disease" rather than deficiency "diseases." The systems that may be involved together with the more important lesions observed in each are summarized in table 2. A deficiency in each specific nutritional element results in characteristic signs and symptoms, and, if the deficiency is continued long enough and is sufficiently intense, a clinical syndrome which is designated a disease may result. Characteristic manifestations due to a lack of the specific food factors are shown in table 3.

With such widespread anatomic involvement and such a multiplicity of clinical signs and symptoms characteristic of specific deficiency, it is necessary to consider the lack of necessary nutritional factors in many clinical problems. Even if a nutritional deficiency is not the ultimate cause of a disease, it may be complicating it or carrying it on. Mackie [1] has well emphasized the frequency and importance of deficiency states in chronic ulcerative colitis. Pellagra has frequently been reported secondary to lesions of the gastro-intestinal tract. Certain diseases such as the neuritis of pregnancy or alcoholism, formerly thought due to some positive toxic agent, are now proved due to the lack of specific nutritional elements. While full-blown deficiency states such as scurvy and beriberi are seldom seen in this country, minor deficiency states are common. I have been much impressed with the frequency of deficiency states, and especially with the frequent manifestations of multiple nutritional deficiency disease. It is often possible to determine definitely that more than one factor is lacking. In other cases the multiple manifestations observed may be related to a single deficiency. Thus Miller and Rhoads,[2]

From the Cleveland Clinic.

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Mackie, T. T.: Ulcerative Colitis: II. The Factor of Deficiency States, J. A. M. A. **104**: 175-178 (Jan. 19) 1935.

2. Miller, D. K., and Rhoads, C. P.: The Experimental Production of the Loss of Hematopoietic Elements of the Gastric Secretion and of the Liver in Swine with Achlorhydria and Anemia, J. Clin. Investigation **14**: 153-172 (March) 1935.

using a diet which produces black tongue in dogs and which was considered by Goldberger to be deficient only in the pellagra-preventing factor, have produced in swine (1) an anemia usually macrocytic but sometimes microcytic, (2) ulcerative lesions of the oral mucous membranes, (3) gastric achlorhydria with the absence of the normal hematopoietic activity of the gastric secretion, (4) diarrhea and (5) motor weakness. With this diet which contains all mineral salts and known vitamins, they have thus produced symptoms suggestive of sprue, pellagra and pernicious anemia. The symptoms are prevented or cured by liver extract, so these authors conclude that they are due to the lack of some unknown constituent contained in liver extract. These experiments well emphasize the complexity of the nutritional problem.

The following typical case reports illustrate the multiplicity of the symptoms of deficiency disease:

CASE 1.—*Multiple neuritis with marked hypochromic anemia. History.*—A woman, aged 48, had always tired easily and been undernourished. For eighteen years she had had severe pain in various muscles and joints, which was more marked in the arms and legs and interfered with sleep. The pain had been interpreted as due to arthritis but there had never been any swelling, redness or other definite evidence of joint disease. The tonsils had been removed and treatment given by numerous physicians without relief. For five years the patient had had epigastric distress, distention and occasional vomiting, nervousness and weakness. She complained that her skin had become atrophic and wrinkled. Her periods were always normal up to the menopause three years before. There had been no abnormal loss of blood. Two years previously she had had a generalized edema without apparent cause and during the past winter again had edema of the legs without evidence of myocardial weakness. She had had two attacks of diarrhea lasting several weeks each. The tongue was not sore, the appetite was poor and the patient had never been told that she was anemic.

Examination.—The patient was very pale and undernourished. The skin over the hands was smooth and glistening; there was no pigmentation; the nails were normal. There was no atrophy or redness of the tongue. There was a systolic murmur over the entire precordium. The blood pressure was 96 systolic and 56 diastolic. The liver edge was palpable and

TABLE 1.—*Nutritional Factors with a Specific Function in Adult*

Factor	Specific Function
Calcium	Necessary for the normal function of nerve tissue
Iron	Necessary for the formation of hemoglobin and erythrocytes
Vitamin A	Necessary for the integrity of epithelial tissues
Vitamin B	Necessary for the integrity of nerve tissues
Vitamin B_2 (G)	Necessary for the integrity of dermal tissues
Vitamin C	Necessary for the integrity of the endothelium of blood vessels
Anti-pernicious anemia factor	Necessary for the maturation of erythrocytes in bone marrow

the spleen was three fingerbreadths below the costal margin. The patient complained of pain on deep pressure all over the body. Movement of the joints gave pain in the muscles. There was no objective evidence of joint disease and no edema.

The urine examination and the Wassermann test were negative. Examination of the stool showed no blood parasites or other abnormality. The test meal revealed an achlorhydria with a total acidity of 37. A gastro-intestinal x-ray study showed a normal gallbladder, stomach and duodenum. The colon was very atonic and redundant. The blood showed red blood cells, 3,410,000; hemoglobin, 31 per cent (4.8 Gm.); volume index, 0.65; color index, 6.46; leukocytes, 8,100 with a normal differential count. The icterus index was 2 and platelets were abundant.

The anemia presented by this patient was a typical iron deficiency type, which in the absence of abnormal blood loss suggested a defect in intake or utilization of iron. The skeletal changes were suggestive of a neuritis due to a vitamin B deficiency. The patient had taken an incomplete and poorly balanced diet for years. She had not eaten much meat since childhood and ate very few vegetables. The intake of fruit seemed sufficient.

TABLE 2.—*Systems Involved and Lesions Observed in Deficiency Disease in Adults*

System	Lesions Observed as Manifestation of Deficiency
I. Skin and other epithelial tissues	(1) Atrophy, (2) scaling, (3) dermatitis, (4) pigmentation, (5) ulceration, (6) cornification
II. Nervous system	A. Neuritis: (1) pain, (2) paresthesia, (3) weakness, (4) paralysis B. Degeneration of spinal cord: (1) lateral column, (2) posterior column C. Cerebral: (1) mental disturbances D. Disturbance of function: (1) tetany
III. Alimentary tract	(1) Anorexia, (2) stomatitis, (3) glossitis, (4) atrophy of tongue, (5) achlorhydria, (6) loss of specific ferments, (7) diarrhea (8) loss of tone of gastro-intestinal tract, (9) ulceration of intestine
IV. Hematopoietic system	(1) Macrocytic anemia, (2) hypochromic anemia, (3) microcytic anemia
V. Vascular system	(1) Hemorrhage, (2) easy bruising, (3) edema

The neuritis, the edema, the skin changes, the hypochromic anemia, the redundant colon, the achlorhydria and other gastro-intestinal disturbances were all well explained on a deficiency basis. Deficient intake, dietary imbalance and poor absorption and utilization were all factors here in the development of clinical disease.

CASE 2.—*Anemia and paralysis due to polyneuritis in pregnancy. History.*—A woman, aged 22, had been married five years and at the time of examination was pregnant for the fifth time. The first two pregnancies terminated normally and the second two ended in stillbirths late in pregnancy. The patient on admission was in the sixth month of the fifth pregnancy. She had never menstruated since marriage and remarked that she had been pregnant almost every day from the time she was married. Seven months before admission, just after the last stillbirth, she first noticed weakness and numbness of the hands. Similar symptoms soon appeared in the feet. No pain was present. The weakness was progressive until she was completely disabled. The tongue was not sore and there were no skin changes.

Examination.—There was complete paralysis of the arms and legs with absent deep reflexes but without sensory disturbances. There was moderate atrophy of the muscles of the arms and legs. The tongue was smooth and red. No edema was present. Except for marked dental caries, the examination was negative.

The blood Wassermann reaction was negative. The spinal fluid showed nothing significant. The test meal revealed an achlorhydria with a total acidity of 31 per cent. The blood examination showed red blood cells, 3,950,000; hemoglobin, 68 per cent (10.5 Gm.); volume index, 0.97; color index, 0.84; leukocytes, 11,250, with a normal differential count. The icterus index was 6 and platelets were normal.

This patient lived in a mill town under poor conditions and had had a very limited diet for economic reasons. The rapid pregnancies were a marked drain on her food store. She had also had marked vomiting with each pregnancy, so the conditions were ideal for the development of deficiency disease. In the past, when a neuritis such as this occurred in pregnancy it was interpreted as due to some toxic factor incident to the pregnant state. This patient was put on a balanced diet with added vitamin B in the form of yeast, liver extract intravenously and iron. She went through the pregnancy without mishap and had a healthy baby. There

was gradual improvement in the paralysis. She wrote six months later that she could work normally.

CASE 3.—*Macrocytic anemia with peripheral neuritis, sprue and tetany. History.*—A man, aged 26, was diagnosed as having pernicious anemia two years previously and had taken a potent liver extract daily by mouth for sixteen months. At the time of admission he had a constant diarrhea, excessive gas formation and weakness. For one year he had had marked numbness of the hands and feet, but the tongue was not sore.

Examination.—Nothing significant was found on the general physical examination. The tongue was smooth. The reflexes were normal, the vibratory sense was intact and the position sense was good. The stool examination showed no blood or parasites. The test meal revealed an achlorhydria with a total acidity of 16 per cent. The Wassermann test and examination of the urine gave negative results. The blood examination showed red blood cells, 2,940,000; hemoglobin, 78 per cent (12 Gm.); volume index, 1.44; color index, 1.32, and leukocyte count, 11,400 with normal differential count. The icterus index was 3 and the platelets were normal.

Course in Hospital.—With adequate intramuscular liver therapy the diarrhea ceased, and there was marked general improvement and a gain of 25 pounds (11.3 Kg.). While he was in the hospital a typical carpopedal spasm of tetany developed, which was relieved by intravenous calcium therapy. The following day the serum calcium was 9.8 mg. per hundred cubic centimeters. Later it was 8.64 mg. Six months later all symptoms returned while the patient was eating liver daily, but again response to intramuscular liver extract was obtained. The patient's condition has continued to be satisfactory although it has been difficult to prevent a macrocytosis of the erythrocytes and diarrhea.

This patient had a macrocytic anemia due to the deficiency in the anti-pernicious anemia factor, a deficiency neuritis, symptoms suggesting sprue especially in view of the leukocytosis which had been constant, and tetany due to a lack of calcium. All symptoms and signs responded to intramuscular liver therapy.

CASE 4.—*Pernicious anemia and sprue, with low blood proteins. History.*—A woman, aged 50, had been exhausted for several years. For the past three years she had been having attacks of diarrhea, which at first responded to dietary management. She had never seen blood or mucus in the stools. One year before admission, following an attack of influenza, the diarrhea had become much worse and had persisted to the present time. For the past six months she had been confined to bed because of the diarrhea, occasional attacks of vomiting and palpitation. She had lost 40 pounds (18 Kg.) in two years. The appetite had been poor. Nine months before she had marked swelling of the ankles without apparent cause. The patient thought her diet had been normal except for the recent omission of fruits and vegetables after the onset of the diarrhea. She had six children, who were living and well. Her past history was unimportant.

Examination.—The skin was dry and atrophic but without pigmentation. The tongue was clean and atrophic with red edges. There was a constant tachycardia but no evidence of organic heart disease. There was some edema of the feet. The examination otherwise was negative.

The urine examination was negative. The basal metabolic rate was minus 19 per cent. The serum calcium was 8.82 mg. per hundred cubic centimeters. Serum protein was 3.58 per cent with 1.65 per cent albumin and 1.93 per cent globulin. The stools were light greenish without blood or parasites. The proctoscopic examination was negative and the roentgen study of the gastro-intestinal tract showed only hypermotility. The blood count showed red blood cells, 3,700,000; hemoglobin, 78 per cent (12 Gm.); volume index, 1.18; color index, 1.05; leukocytes, 14,900 with a normal differential count. The icterus index was 5 and the platelets were normal.

This patient had a macrocytic anemia due to a deficiency of the anti-pernicious anemia factor, and the low proteins, the leukocytosis, the diarrhea and the hypocalcemia of sprue. With intramuscular liver therapy the appetite returned, the edema began to disappear and before the patient left the hospital the bowel movements decreased to two or three a day with normally formed stools.

CASE 5.—*Pellagra and pernicious anemia. History.*—An unmarried woman, aged 60, had been losing weight for three months and had become increasingly weak and mentally dull. For one week she had been confined to bed. She had noticed pallor and dryness of the skin and she had been constipated for years. Her past history was otherwise unimportant.

Examination.—The patient's mental reactions were so sluggish that she responded to questions with difficulty and was constantly confused. She was obese. The blood pressure was 140 systolic and 80 diastolic. Examination of the heart, lungs, abdomen and pelvis was negative. The face and legs were edematous but did not pit on pressure. The dorsum of the hands showed marked wrinkling and a scaly dermatitis. The skin was everywhere dry and the pubic and axillary hair was scanty. Over the elbows the skin was darkly pigmented. The deep tendon reflexes were sluggish but there were no other neurologic changes of significance. There was no glossitis or stomatitis.

Examination of the urine and the Wassermann test were negative. The basal metabolic rate was minus 35 per cent. The test meal showed no free acid and a total acidity of 10 per cent. The blood proteins were normal (6.33 per cent). The urea clearance test showed an average of 45 per cent with a blood urea of 33 mg. per hundred cubic centimeters. The x-ray study of the gastro-intestinal tract was negative except for absence of filling of the gallbladder. The blood examination showed red blood cells, 2,990,000; hemoglobin, 65 per cent (10 Gm.); volume index, 1.21; color index, 1.08; leukocytes, 10,100, with a normal differential count. The icterus index was 5 and the platelets were normal.

TABLE 3.—*Clinical Conditions Associated with Specific Nutritional Deficiency*

Nutritional Factor	Clinical Signs of Deficiency	Clinical Syndrome ("Disease")
Calcium	Increased nerve irritability	Tetany
Iron	Anemia of hypochromic and often microcytic type	Hypochromic anemia
Vitamin A	Epithelial defects	Ophthalmia, urinary calculi, night blindness
Vitamin B	Anorexia, neuritis, edema	Beriberi, multiple neuritis
Vitamin B_2 (G)	Glossitis, dermatitis, neuritis, mental disturbances	Pellagra (?)
Vitamin C	Hemorrhage due to vascular defects	Scurvy
Anti-pernicious anemia factor	Glossitis, diarrhea, anemia of macrocytic type, degeneration of spinal cord	Pernicious anemia, subacute combined degeneration of spinal cord, sprue

The patient's temperature ranged from normal to 102 F. but gradually returned to normal. With high vitamin feeding and liver extract intramuscularly, the edema disappeared, the mental processes became more alert and the appearance was much brighter. One week after admission the basal metabolic rate had risen to minus 1 per cent. The patient had the macrocytic anemia typical of pernicious anemia as well as the skin and mental changes seen in well developed pellagra. The picture is much like that produced by Miller and Rhoads [2] in swine with a black tongue diet. It is possible that all this patient's difficulties followed the absence of some one factor supplied therapeutically by liver extract.

CASE 6.—*Pellagra, mild scurvy and hypochromic anemia. History.*—A woman, aged 43, admitted to the Cleveland Clinic in July 1933, complained of nosebleed, dizziness, neuralgia, nausea and vomiting. She stated that for nine months she had

had a severe pain over the left eye associated with marked dizziness, nosebleed and nausea. She had had marked constipation. She had always bruised easily. A complete examination at that time showed nothing significant except a slight rotary nystagmus, a positive Romberg test and a chronic hypertrophic arthritis. The Wassermann test gave negative results, the urea clearance was normal, examination of the urine was negative and the blood sugar and urea were normal.

She did not improve and was seen again nearly two years later with the history that all her symptoms had become much worse following an attack of influenza six months before. The pain in the left frontal area was severe. The speech was slow and drawling and the gait was ataxic. The nystagmus and positive Romberg tests were still present. The deep tendon reflexes were weak. She had had no edema or paresthesia but did complain of a sore tongue. The nausea and vomiting had ceased after the first admission, although the nosebleed had persisted. The tongue was atrophic and fiery red. There were excoriations at the angle of the mouth, but no pigmentation or dermatitis. Her mental reactions were very slow. The eyegrounds showed nothing of significance and the neurologic examination was negative except for the points mentioned. The spinal fluid was normal. The basal metabolic rate was minus 22 per cent. The test meal showed a free acid content of only 9 and a total of 22 per cent. The blood examination showed red blood cells, 3,860,000; hemoglobin, 65 per cent (10 Gm.); volume index, 0.97, and color index, 0.84. The leukocyte count was 5,000 and the differential count was normal. The icterus index was 2, and the platelets were normal.

The striking manifestations in this case were the mental retardation and other signs of neurologic involvement, the glossitis, the anemia and the tendency to bleed. The appetite was poor and for years the diet had consisted largely of starches and sweets, with almost no meat or vegetables and very little fruit. Her breakfast had consisted entirely of toast and coffee. She showed rapid and marked improvement on a complete high vitamin diet and liver extract intramuscularly. The ataxia and nystagmus were among the first signs to disappear.

CASE 7.—*Iron deficiency anemia with subacute combined sclerosis of the cord. History.*—A woman, aged 50, first noticed numbness of the hands and feet and difficulty in walking after the birth of her first child, who was 25 years old at the time of this examination. These symptoms cleared up entirely but the numbness recurred nine years later and had persisted. For the past year she had had marked difficulty in walking because of loss of muscle sense. At times she had incontinence of urine. Fifteen years before, the spinal fluid was examined and was found to be normal. No history of sore tongue or diarrhea was elicited.

Examination.—The general physical examination was entirely negative except for the neurologic changes. The tongue was normal. The general neurologic examination showed hyperactive knee jerks with a bilateral positive Babinski reaction, ataxic gait, positive Romberg and impaired vibratory sense typical of a combined sclerosis of the spinal cord.

The spinal fluid examination, the urine and the Wassermann tests gave negative results. The test meal showed no free acid and a total acidity of only 7 per cent. The blood count showed red blood cells, 4,910,000; hemoglobin, 68 per cent (10.5 Gm.); volume index, 0.86; color index, 0.69, and leukocyte count, 3,900, with a normal differential count. The icterus index was 4 and the platelets were normal.

This patient's neurologic lesion is typical of that seen in pernicious anemia due to a lack of the anti-pernicious anemia factor. The anemia, however, was an outspoken iron deficiency anemia. The entire picture was typical of deficiency disease. The patient's anemia responded to large doses of iron. Intensive liver therapy was given without much result so far as the neurologic picture was concerned.

CASE 8.—*Pernicious anemia and iron deficiency anemia together. History.*—A man, aged 68, came to the Cleveland Clinic primarily for a difficulty in vision which was found to be due to advanced vascular changes in the retina. He stated that he had been anemic for seven years and had taken liver, iron and liver substitutes with good results. He had had glossitis several years before but not recently. The only other symptom of anemia was weakness. There had been no paresthesia or difficulty in walking. One sister of the patient had pernicious anemia and his father had died of an anemia.

Examination.—The patient had well marked arteriosclerosis and auricular fibrillation. The blood pressure was 140 systolic and 95 diastolic. The vibratory sense was entirely lost over the lower extremities. The neurologic examination was otherwise negative. The tongue was reddened and very atrophic. The finger nails showed the typical spooning of idiopathic hypochromic anemia. The urine and Wassermann tests were negative. The test meal showed no free acid and a total acidity of 8 per cent. The blood showed red blood cells, 3,890,000; hemoglobin, 65 per cent (10 Gm.); volume index, 0.98; color index, 0.83, and leukocyte count, 4,800, with a normal differential count. The icterus index was 4 and the platelets were normal.

The family history, the loss of vibratory sense, the glossitis and atrophic tongue, and the history of response to liver therapy strongly suggested pernicious anemia. The spoon nails were typical of idiopathic hypochromic (iron deficiency) anemia. The blood showed an anemia which suggested a combination of the macrocytosis of pernicious anemia and the microcytosis of hypochromic anemia with the resulting picture of an anemia with cells of normal size. The history, clinical manifestations and blood changes could well be explained on the basis of a mixed deficiency anemia.

COMMENT

A deficiency in specific nutritional factors is an important phase of clinical medicine. The possibility of such a deficiency should be considered in many general clinical surveys just as infection, glandular disorders, allergy and other etiologic factors are considered. The full-blown deficiency "diseases" such as scurvy, beriberi or pernicious anemia are usually recognized, but the minor symptoms of deficiencies that are common are regularly missed unless kept in mind and searched for.

Certain symptoms and signs should always suggest the possibility of a specific nutritional defect. A macrocytosis of the red cells suggests a deficiency of the anti-pernicious anemia factor just as a hypochromia suggests an iron deficiency. Hyperirritability of the neuromuscular mechanisms always suggests a lack of calcium. A glossitis or atrophic tongue as well as peripheral nerve disturbances should always bring to mind a vitamin B deficiency. Dermatitis and pigmentation with nerve disturbances together with stomatitis and glossitis suggests a B_2 deficiency. Easy bruising and unexplained edema should make one think of a deficiency in vitamin C.

The specific elements that have been discussed are all proved factors in nutrition, the presence of which is shown only by symptoms which arise when these elements are absent. The field of nutrition is constantly enlarging and there is little doubt that further study will reveal other specific factors the absence of which will explain other conditions now a mystery to us.

Deficiency disease is due to a lack of the specific nutritional factor at the point in the body where it is needed and normally utilized. The actual incorporation of the nutritional factor in a normal way necessitates an adequate supply, adequately absorbed and adequately utilized, so that every problem in deficiency disease concerns supply, absorption and utilization. For example, to prevent the development of pernicious anemia the bone marrow must constantly have a supply of the anti-pernicious anemia factor which is normally formed in

the stomach by the interaction of the intrinsic factor on the extrinsic factor. Even after it is formed in adequate amounts it must be absorbed and then utilized chemically in the marrow. Since all the specific food elements must be taken in as food or formed directly from the food, the condition of the gastro-intestinal tract is of vital importance. A diarrhea will necessarily cause a decrease in absorption, or vomiting will decrease the supply. Achlorhydria likewise seems an important factor in preventing proper absorption. It has been proved also that dietary imbalance will interfere with absorption and utilization. McCarrison showed that an animal on a maintenance diet of vitamin B will develop signs of a B deficiency if excessive amounts of carbohydrate are added to the maintenance diet. A poorly balanced diet with insufficient protective foods is often taken. Even if sufficiently supplied and absorbed, the utilization may be interfered with by disease or other factors. Chronic nephritis is a frequent cause of faulty utilization. Deficiency disease is more common in women. The symptoms of a nutritional defect often date from a pregnancy when the need for specific food factors is greater and the intake often less, as the result of vomiting.

TABLE 4.—*Factors Influencing the Supply, Absorption and Utilization of Specific Nutritional Elements*

1. Amount ingested or lost directly by vomiting
2. Needs of the body, especially as influenced by pregnancy or other factors increasing the need, such as hyperthyroidism
3. Impairment of absorption into blood stream by:
(*a*) achlorhydria
(*b*) hypometabolism
(*c*) infection
(*d*) imbalance of food especially an excessive intake of carbohydrates
4. Impairment of utilization in tissues by:
(*a*) disease as chronic nephritis
(*b*) hypometabolism
(*c*) infection
(*d*) imbalance of food

The important factors influencing the development of deficiency disease from the standpoint of supply, absorption and utilization are summarized in table 4.

The possible effects of a nutritional deficiency are widespread since almost every tissue of the body may be involved. When one thinks of the essential nature of specific nutritional factors, the frequently deficient intake, the dietary imbalance or the occurrence of disease preventing utilization, it is surprising that deficiency disease is not more common. It is common in the mild forms, although the outspoken clinical entities due to deficiency are unusual. When a deficiency does exist, there is often a lack of more than one factor, so that the deficiency is frequently multiple.

CONCLUSIONS

Symptoms resulting from a deficiency in specific nutritional factors occur frequently, although clinical entities designated deficiency diseases such as beriberi and scurvy are uncommon.

The deficiency may be due to a deficient intake of the specific food factors for normal needs, an insufficient supply for abnormal needs as in pregnancy, a defect in absorption or a disturbance in utilization.

To fulfil its purpose, a nutritional factor not only must reach its point of use in sufficient amount but must actually be used there.

Almost every tissue of the body may be affected by a deficiency in a food factor.

The nutritional defect is frequently multiple, although often one defect is more prominent.

One should think of nutritional deficiency disease or state rather than of deficiency "diseases" and should consider this deficiency state in many clinical problems.

ABSTRACT OF DISCUSSION

DR. R. F. FARQUHARSON, Toronto, Ont.: Chronic disease states as well as certain physiologic states may impair not only the appetite and the intake of food but also the utilization of food. Even when only one element is lacking, as far as one can tell, such as the anti-pernicious anemia factor, there may be disturbance in many parts of the body. The anemia is obvious to every one. The subacute, combined degeneration of the cord is equally well known, as is the glossitis and the disturbance of the heart with its typical pathologic picture. It is probable that these patients suffer also from a general lack of a sense of well being and from a weakness of the muscles due almost entirely to the lack of the anti-pernicious anemia factor. It is quite possible that similar less distinct symptoms arising from the deficiencies may occur in many parts of the body for almost every substance that may be deficient. There is a great difference in individuals in their ability to withstand such deficiencies and a difference in the dose of whatever the deficient substance may be that is necessary to effect relief or cure. Under these circumstances the obvious importance of careful study, careful history taking and careful treatment with observation of the patients is extremely great.

DR. MICHAEL G. WOHL, Philadelphia: It is important to bear in mind that the pure laboratory deficiency disease is not comparable to that seen in human beings. One may be able to eliminate a specific substance from a basal diet in animals and produce a condition such as beriberi or xerophthalmia. In human beings, however, dietary deficiency is more complicated and avitaminosis is frequently of the multiple type; this applies particularly to avitaminosis B, because in the majority of instances there is anorexia, and with the lack of intake of food there is other absence of vitamin. In addition to the lack of vitamins from which these patients suffer they suffer from lack of other food elements, especially the proteins, and if one considers that most of these patients in addition to the hypovitaminosis are also undernourished, one questions how much of the recorded pathologic anatomy and physiology is due to the lack of vitamins, and how much to general undernutrition. I have already reported that a patient with diabetes mellitus developed, as the result of prolonged dietary restrictions characterized by poor vitamin B intake, the cardiac and neurotoxic signs of beriberi and the eye changes of xerophthalmia. The postmortem confirmed the diagnosis. The functions of some of the endocrine glands depend in a large measure on an adequate diet, as, for example, absence of vitamin E, causing degeneration of the germinal cells in the male and sterility in the female. Evans and Simpson have shown a subnormal sex hormone content of the pituitary in animals on an inadequate vitamin B diet. Witness the close similarity in the chemical structure between vitamin A and estrogenic substance. Vitamin B is closely knit with the thyroid. Experimental B_1 avitaminosis behaves very much like hypothyroidism: both conditions are marked by low basal metabolism, low specific dynamic action of food, subnormal temperature and diminished intestinal peristalsis. Both show anemia and hypochlorhydria. If one bears this in mind one will be more careful in attributing all the symptoms to avitaminosis, but some of the symptoms will be explained on the basis of endocrine involvement. This point was impressed on me recently by a patient at the Temple University Hospital, who had lost 45 pounds (20 Kg.) in two years because of improper food intake due to some gastro-intestinal disturbance. She developed amenorrhea, brittle fingernails, asthenia, hyperasthesia, loss of hair, and a basal metabolism of minus 34 per cent. When the patient was placed on a high caloric and high vitamin B diet, she showed marked improvement in what appeared to be clinically a polyglandular syndrome.

DR. RUSSELL L. HADEN, Cleveland: I thought I made the subject complex enough, and now I fear that Dr. Wohl has made it still more so. It is quite possible that some of the effects of dietary deficiency may be secondary to changes in the glands of internal secretion initiated by the dietary defect.

THE NATURE OF THE ANTIPERNICIOUS ANEMIA PRINCIPLE IN STOMACH

I. METHOD TO IMPROVE STOMACH PREPARATIONS

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Castle and his co-workers [1] have published an extensive series of important experiments, which proved that pernicious anemia is the result of the inability of the stomach to secrete a definite antipernicious anemia factor. These investigations also showed that this hematopoietic factor is present in the gastric juice and gastric mucosa of normal individuals.

These experiments were utilized by Castle in the elaboration of a theory that sought to explain the nature of the gastric deficiency in pernicious anemia. In the present communication the evidence on which this conception is founded is subjected to further analysis. Certain original experiments are described, which suggest a different interpretation of the experimental results that form the basis of this theory. This leads to a different conception of the nature of the deficiency causing pernicious anemia and of the nature of the antianemic substance that is deficient.

CASTLE'S THEORY AND ITS EXPERIMENTAL BASIS

Castle's theory is based on the striking beneficial results obtained by feeding to pernicious anemia patients incubated mixtures of gastric juice (or pig gastric mucosa) and beef; the effects were comparable to those obtained by liver therapy:

Positive results were obtained with mixtures of gastric juice and beef whether the material was incubated at acid or neutral reactions. In eight pernicious anemia patients of an early series the material consisted of 300 cc. of gastric juice from normal subjects mixed with 200 Gm. of ground beef, incubated for two hours at 37 C. at a p_H of 2.5 to 3.5 and neutralized to p_H 5 prior to administration.[1c] In later experiments the reaction of the material was p_H 7 throughout.[1d]

Castle then showed that the feeding of gastric juice alone or beef alone was ineffective in pernicious anemia. Other experiments showed that incubated mixtures of pig gastric mucosa and beef also gave positive results; thus it became apparent that the active agent in gastric juice was originally derived from the gastric mucosa.

It was by interpretation of these experiments that Castle elaborated his theory of the duality of the factors involved: "The active constituent (intrinsic factor) of the normal human fasting gastric contents is in all probability secreted by the mucosa of the stomach. . . . This substance is probably organic, thermolabile, possibly an enzyme, capable of interaction with protein (extrinsic factor) or closely related substances in neutral solution, resulting in the production of material having, when administered to pernicious anemia patients, a marked hematopoietic effect." [1d]

He believed that such a "specific reaction" between "intrinsic" and "extrinsic" factors occurs in the gastrointestinal tracts of all normal individuals and that the basic defect leading to the development of pernicious anemia is the inability of the gastric mucosa to secrete the "intrinsic" factor and the failure of the normal "specific reaction" to occur. Castle termed this a "conditioned deficiency" and "a virtual deficiency in the presence of a diet adequate for the normal man." This conception did not agree with one that I previously held.

THE AUTHOR'S WORKING THEORY

My interest in this subject began in 1924, before the advent of Minot and Murphy's important work. Based on the constant presence of achylia gastrica in pernicious anemia, the following working theory was set down at that time:

An erythrocyte-stimulating hormone resides in the gastric mucosa. In pernicious anemia, in which atrophy of the gastric mucosa takes place, a loss of this hormone occurs, coinciding with the disappearance of acid from the gastric juice. Thus, in addition to the well known external secretion (digestive) the glands of the gastric mucosa produce an internal secretion (hematopoietic); this suggests an analogy to the pancreatic gland. It is possible that this hematopoietic hormone may control the level of erythrocyte production in normal individuals.

This conception of the rôle of the stomach is seen to differ from Castle's theory in that it conceived of pernicious anemia as due to deficiency of a single substance for the normal action of which no "extrinsic" or food factor was necessary.

In order to test this theory, certain animal experiments were performed at that time which showed that extracts of the stomach mucosa of the hog, when injected into normal rabbits and guinea-pigs, would produce (1) a temporary erythrocytosis with an absolute increase of from 1 to 4 million erythrocytes within two hours after injection, (2) a moderate reticulocytosis and (3) bone marrow hyperplasia after repeated injections. These experiments, carried out in the department of pharmacology of McGill University during 1924 and 1925 and until now unpublished,[2] will be described in detail in another place. For the present suffice it to say that in 1926, as a result of these animal experiments, and whether or not justified by them, a dried hog gastric mucosa was prepared for trial in the treatment of pernicious anemia, in the hope that a specific antipernicious anemia effect would be demonstrated. Unfortunately, clinical cases of pernicious anemia were not available for trial at that time.

Several years later, however, after Castle had shown that the stomach plays an important rôle in the etiology

1. This work is covered in the following publications:
(*a*) Castle, W. B., and Locke, E. A.: Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia, J. Clin. Investigation **6**: 2 (Aug.) 1928.
(*b*) Castle, W. B.: Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia: I. The Effect of the Administration in Patients with Pernicious Anemia of the Contents of the Normal Human Stomach Recovered After the Ingestion of Beef Muscle, Am. J. M. Sc. **178**: 748 (Dec.) 1929.
(*c*) Castle, W. B., and Townsend, W. C.: Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia: II. The Effect of the Administration of Patients with Pernicious Anemia of Beef Muscle After Incubation with Normal Gastric Juice, Am. J. M. Sc. **178**: 764 (Dec.) 1929.
(*d*) Castle, W. B.; Townsend, W. C., and Heath, C. W.: Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia; III. The Nature of the Reactions Between Normal Gastric Juice and Beef Muscle Leading to Clinical Improvement and Increased Blood Formation Similar to the Effect of Liver Feeding, Am. J. M. Sc. **180**: 305 (Sept.) 1930.
(*e*) Castle, W. B.; Townsend, W. C., and Heath, C. W.: Further Observations on Etiological Relationship of Achylia Gastrica to Pernicious Anemia, J. Clin. Investigation **9**: 2 (Aug.) 1930; Lancet **1**: 1062 (May 17) 1930.
(*f*) Castle, W. B.; Heath, C. W., and Strauss, M. B.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia; IV. A Biological Assay of the Gastric Secretions of Patients with Pernicious Anemia Having Free Hydrochloric Acid and That of Patients Without Anemia or With Hypochromic Anemia Having No Free Hydrochloric Acid, and of the Rôle of Intestinal Impermeability to Hematopoietic Substances in Pernicious Anemia, Am. J. M. Sc. **182**: 741 (Dec.) 1931.
(*g*) Strauss, M. B., and Castle, W. B.: The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in Related Macrocytic Anemias: Activation of Yeast Derivatives with Normal Gastric Juice, New England J. Med. **207**: 55 (July) 1933.

2. Presented in part before the American Association of Clinical Pathologists in June 1934.

of pernicious anemia, it was shown by Sharp [3] and by Sturgis and Isaacs [4] that dried whole stomach is as specificially effective as liver in the treatment of pernicious anemia. My original prediction was thus fulfilled, but my concept of the nature of the gastric deficiency causing pernicious anemia was quite different from that laid down in Castle's theory. For this reason, and also because the latter theory seemed complicated and seemed to present no analogy to any known biologic mechanism and to resemble no known deficiency state, it was natural that the experimental basis of Castle's theory should be carefully reviewed.

ANALYSIS OF EXPERIMENTS ON WHICH CASTLE'S THEORY IS FOUNDED

In this way attention was directed to two sets of key experiments, each of which was reported as having given conflicting results. Since Castle's theory is founded on the positive results obtained from feeding gastric mucosa-beef mixtures, and the negative results from gastric mucosa alone, it seems important to explain Castle's contradictory observations in both types of experiment.

An important difference in technic gives a clue for the opposite results obtained with the same material. For example, in those gastric mucosa-beef experiments in which positive results were obtained, it may be seen that the mucosa had been stripped from fresh pig's stomach and placed in the icebox.[5] This freshly preserved mucosa was removed from the icebox when required and incubated with beef prior to administration, and it yielded good results in treatment.

The same type of experiment is found, however, to have given negative results at an earlier time.[1a] The technic is briefly described in the original communication, but in a later paper the authors explain that the mucosa "had been autolyzed with hydrochloric acid in the incubator" prior to mixing and incubating with beef.[6]

Regarding the experiments with gastric mucosa alone the authors state in the same place: "We had also fed certain pernicious anemia patients 200 or more grams daily of this autolyzed pig gastric mucosa. These experiments were either entirely negative . . . or showed a doubtful effect on blood formation. . . . In our experiments with pig gastric mucosa the tissue was always incubated at 37.5 C. for at least forty-eight hours in the presence of hydrochloric acid."

In later experiments in which they had decided to use "as nearly fresh pig mucosa as possible," definitely positive results were obtained from "as little as 30 grams of fresh mucosa alone." [7] These authors were "forced to conclude . . . that the effects seen . . . may have been entirely due to the independent action of the gastric mucosa." Since Castle's theory is founded on the belief that the addition of beef or some "other source of extrinsic factor" is necessary for the production of the antipernicious anemia principle, these positive results with gastric mucosa alone require explanation.

In their attempt to explain these results on the basis of Castle's theory, the authors assume that "other constituents" in the mucosa had served as the "extrinsic" factor in the manner of the beef of other experiments and that these "other constituents" had been acted on by the "intrinsic" factor in the mucosa.

Even if such an interpretation of the positive results with mucosa feeding were acceptable, it would not explain the negative results at another time. It does not appear probable that opposite results would have been obtained unless a difference in technic had existed. It seems obvious that, in the earlier experiments in which mucosa gave negative results, autolysis had brought about the destruction of the antipernicious anemia factor in the mucosa.[8] Similarly, the ineffectiveness of the earlier gastric mucosa-beef mixtures was due to the use of mucosa that had been previously autolyzed. In order to determine which factor in the autolytic process is responsible for the destruction of the antipernicious anemia substance, the following experiments were performed:

EXPERIMENTS

To 40 Gm. of ventriculin [9] was added 200 cc. of water, 0.1 Gm. of pepsin and sufficient dilute hydrochloric acid to turn red congo paper blue. This reaction was maintained approximately while the mixture was incubated over night at 38 C. This quantity was prepared daily and the mixture was fed daily in tomato juice to a relapsing pernicious anemia patient with an erythrocyte count of 1.8 million. There was no reticulocyte response after ten days of treatment. To control the experiment, treatment with ordinary ventriculin was now instituted and a daily dose of 40 Gm. was fed in tomato juice. After six days the reticulocytes numbered 29.3 per cent.

In a second experiment, in which the pepsinized ventriculin was incubated for only two hours instead of over night, a negative result was again obtained after eight days of treatment.

In these experiments the addition of pepsin and hydrochloric acid destroyed the antipernicious anemia properties of ventriculin. It was not possible, however, to decide whether this inactivation was due to the hydrochloric acid or to pepsin. To determine this point, it would be necessary to use not ventriculin, which contains native pepsin, but a stomach preparation that would be free of pepsin. Such a depepsinized preparation was therefore made. Fenger and Andrew [10] described a method for the extraction of commercial pepsin in which peptic hydrolysis of the gastric mucosa is avoided. By so doing they were able to obtain a purer pepsin. Since my object was to remove pepsin without destroying the gastric mucosa and its content of antipernicious anemia principle, this method of extraction seemed ideal, and it was adapted as a first stage in the preparation of a depepsinized desiccated gastric mucosa.

The method used was as follows: To each kilogram of fresh frozen gastric mucosa 400 cc. of 2 per cent hydrochloric acid was added and the mixture allowed to stand over night at 0 C. Then 1,250 cc. of acetone was added and the material strained and filtered. The pepsin in the filtrate was precipitated by the addition of 625 cc. of acetone at a p_H of from 3.4 to 3.6. After

3. Sharp, E. A.: An Antianemic Factor in Desiccated Stomach, J. A. M. A. **93**: 749 (Sept. 7) 1929.
4. Sturgis, C. C., and Isaacs, Raphael: Desiccated Stomach in the Treatment of Pernicious Anemia, J. A. M. A. **93**: 747 (Sept. 7) 1929.
5. Castle, Townsend and Heath,[1d] p. 319.
6. Castle, Townsend and Heath,[1d] pp. 318-319.
7. Castle, Townsend and Heath,[1d] p. 320.
8. Wilkinson, J. F., and Klein, Louis: The Active Principle in Hog's Stomach Mucosa Effective in Pernicious Anemia, Lancet **1**: 719 (April 2) 1932. These authors state that the antipernicious anemia factor in stomach mucosa is destroyed by "autolysis, especially in the presence of free hydrochloric acid" or "prolonged digestion with pepsin and hydrochloric acid."
9. Ventriculin is a commercial preparation of desiccated defatted hog stomach, the activity of which is ensured by testing on pernicious anemia patients prior to marketing. An increase of blood reticulocytes, as shown by Minot, is the accepted sign of activity of a potent antipernicious anemia preparation (Minot, J. R.; Murphy, W. P., and Stetson, R. P.: The Response of the Reticulocytes to Liver Therapy, Particularly in Pernicious Anemia, Am. J. M. Sc. **175**: 581 [May] 1928).
10. Fenger, Frederic, and Andrew, R. H.: On the Iso-Electric Precipitation of Pepsin, J. Biol. Chem. **78**: 371 (June) 1927.

this precipitate containing pepsin was removed, the filtrate was mixed with the original material and desiccated at 45 C.

This preparation of depepsinized gastric mucosa was now tested to determine whether it possessed antipernicious anemia activity. Single daily doses of 40 Gm. were given orally to a pernicious anemia patient with an erythrocyte count of 1.3 million. A very good reticulocyte response of 41.2 per cent was obtained on the sixth day, and continued treatment produced a satisfactory remission.

It was now possible to determine the separate effect of pepsin and of hydrochloric acid on the activity of this preparation. A mixture of 40 Gm. of the depepsinized gastric mucosa, 0.1 Gm. of pepsin, 200 cc. of water and sufficient hydrochloric acid to turn red congo paper blue was incubated for four hours. This amount of material was given orally each day to a relapsing pernicious anemia patient with an erythrocyte count of 1.8 million. After nine days of treatment this material failed to produce a reticulocyte response.

Since pernicious anemia patients in relapse, suitable for testing of experimental material, were scarce, the same patient who had responded negatively to the foregoing material was utilized for the next experiment. The patient was now fed daily with a mixture consisting of 40 Gm. of depepsinized gastric mucosa, 200 cc. of water and sufficient dilute hydrochloric acid to turn red congo paper blue, which had been incubated for four hours. No pepsin was found on testing the original material by Mett's method and none was added. The patient now responded on the sixth day with 22 per cent reticulocytes.

The results of these experiments indicated that (1) the pepsin content of normal hog gastric mucosa could be removed without destroying the antipernicious anemia principle, (2) that peptic activity destroys the antipernicious anemia principle and (3) that hydrochloric acid alone does not.

This demonstration of the antagonism of pepsin toward the antipernicious anemia substance in gastric mucosa suggested an explanation for the fact observed by Castle that the feeding of normal human gastric juice alone is ineffective in pernicious anemia. Was the antipernicious anemia substance in such normal gastric juice destroyed by the native pepsin also present? To establish this point, the collection of normal gastric juice was carried out under conditions that should inactivate the pepsin present:

Two normal subjects, after having been given 60 grains (4 Gm.) of calcium carbonate orally as a neutralizing agent, were injected with histamine in order to stimulate the flow of gastric juice. By means of a Rehfuss tube the gastric juice was then aspirated and collected in a glass beaker containing ice and surrounded by ice. Care was taken immediately to adjust the reaction of the juice to neutrality and to maintain it so, until it was given to a pernicious anemia patient who had been selected for the testing of this material. The patient was fed about 250 cc. of this cold, neutralized gastric juice each day. It was given in the morning, on an empty stomach, and no food was allowed for the following four hours, in order to avoid the introduction of the so-called extrinsic factor. The result obtained was quite different from that observed by Castle from the administration of normal gastric juice alone. This patient, whose initial red blood cell level was 2.6 million, responded with 14 per cent reticulocytes on the seventh day.

This experiment showed that the oral administration of normal gastric juice is effective in pernicious anemia if peptic activity is prevented; also that the mere physical presence of pepsin is not destructive to the antipernicious anemia factor, if the pepsin is inactive. Since the gastric juice was effective without the addition of beef or other substance that might serve as the "extrinsic" factor, the existence of the latter would seem to be questionable.

REINTERPRETATION OF CASTLE'S BASIC EXPERIMENT

In the light of the pepsin-sensitive nature of the antipernicious anemia substance in stomach, the experimental results that form the basis of Castle's theory may now be reexamined in a new way. When positive results followed the feeding to pernicious anemia patients of incubated mixtures of gastric juice and beef, the active agent, according to Castle's theory, was a third substance resulting from a "specific reaction" between the gastric juice and beef (equation 1).

It must be recalled, however, that the gastric juice in this equation contained, besides the antipernicious anemia substance, an abundance of native pepsin. The enzyme pepsin is known to have a strong affinity for protein, such as that in beef and fibrin. When such protein is in contact with pepsin in a fluid menstruum, the pepsin is adsorbed to the protein. If the menstruum is of proper acidity, the protein will be digested; otherwise it is simply bound to the unaltered protein. "If a piece of protein such as fibrin be immersed in a solution of pepsin and then taken out and washed of all adherent pepsin, it will be found, on placing it in a hydrochloric acid solution of proper strength, that peptic digestion proceeds. Advantage may be taken of this fact to separate pepsin from a solution." [11]

Applying these facts to the equation representing Castle's experiment, it becomes possible to explain the effectiveness of the mixtures of gastric juice and beef by a logical mechanism. By the natural law cited, the native pepsin in the gastric juice must have been adsorbed by the ground beef with which it was incubated. When the pepsin had in this way been "separated" or removed from the mixture, it could not exert its antagonistic action on the antipernicious anemia principle, the "intrinsic factor." The amount of beef used was capable of binding a considerable amount of pepsin. Thus, it is seen that the beef served to protect the antipernicious anemia principle and not as a substrate for the action of an enzyme-like "intrinsic factor." This interpretation of Castle's experimental results has the advantage of simplicity and may be expressed in equation 2.

Thus, while according to Castle the active antipernicious anemia agent originally present in the gastric juice becomes transformed to a different substance after incubation with beef, by the newer interpretation the original agent is unaltered in nature and remains the original factor (A) of the equation.

By this interpretation no biologic interaction, such as conceived by Castle, is deemed to have taken place when gastric juice and beef were incubated together. Such mixtures have later been found to be effective without any preliminary incubation,[12] which would be the case if their effectiveness depended simply on the adsorption of the pepsin by the beef.

11. Macleod, J. J. R.: Physiology and Biochemistry in Modern Medicine, ed. 5, St. Louis, C. V. Mosby Company, 1926, p. 718.
12. Castle, W. B.: The Etiology of Pernicious and Related Macrocytic Anemias, Science **82**: 159 (Aug. 23) 1935.

Klein and Wilkinson [13] believed that they obtained a substance different from the original active agent in their stomach extract, when the latter was incubated with beef. They found that the active agent in this mixture survived a temperature of from 60 to 70 C. for half an hour and was soluble in 70 per cent alcohol, while the active principle in their stomach extract was destroyed by such heating and was not soluble in 70 per cent alcohol. It is known, however, that an active agent in an impure mixture frequently shows a different vulnerability to heat.

Certainly these observations cannot be regarded as having established the identity of the active principle in their mixture with the active principle of liver, as suggested by these investigators. The antipernicious anemia factor in autolyzed yeast is also resistant to from 60 to 70 C. for half an hour and is also soluble in 70 per cent alcohol yet is recognized as being different from the liver principle. Castle agrees in this criticism and states that "to establish thermal identity with the active principle in liver it is at least necessary to show that boiling is without effect." [12]

THE "EXTRINSIC FACTOR"

It should be clear that the foregoing is intended not to contest the validity of Castle's important contribution of the positive rôle of gastric deficiency in the etiology of pernicious anemia but rather to clarify the nature of this deficiency. With regard to the latter, Castle's conception has undergone considerable change with the passage of time. At first the "extrinsic factor" was regarded as protein in nature and pernicious anemia was believed due to "inadequate protein digestion." Later, when Castle and Strauss [15] obtained positive results with mixtures of gastric juice and autolyzed yeast as they had with gastric juice and beef, the "extrinsic factor" came to be identified with vitamin B_2; [15] it was then hypothecated that pernicious anemia was the result of the nonoccurrence of a normal "specific reaction" between "intrinsic" and "extrinsic" factors.

Autolyzed yeast was believed to serve as the "extrinsic factor," in the manner of the beef of earlier experiments. Inconsistent with this idea is the fact that, while beef per se had been found ineffective in pernicious anemia, autolyzed yeast has been shown to be moderately effective in pernicious anemia [16] and as strikingly effective as liver in "pernicious anemia of the tropics." [17]

EQUATION 1.—*Castle's Basic Theory*

Normal Gastric Juice		Beef Muscle		
antipernicious anemia factor (A), by Castle termed "intrinsic factor" and regarded as a new enzyme	Plus	by Castle termed "extrinsic factor"	→	antipernicious anemia factor (C), a different substance from the original A, thought by Castle to be the product of the action of A on B

EQUATION 2.—*Author's Theory*

Normal Gastric Juice		Beef Muscle		
antipernicious anemia factor (A), also free pepsin	Plus	containing protein (B)	→	antipernicious anemia factor (A), also bound pepsin

REINTERPRETATION OF THE EXPERIMENT OF STURGIS AND ISAACS

After Castle had shown that the stomach plays an important rôle in the etiology of pernicious anemia, Sharp,[3] Sturgis [14] and Isaacs demonstrated that desiccated whole hog stomach is as effective as liver in the practical treatment of pernicious anemia. The last-named investigators then conducted experiments to determine the effectiveness of individual layers of the stomach wall, compared to whole stomach.

They found stomach mucosa active but inferior in potency to whole stomach; the muscularis was completely inert. The authors then attempted to explain the difference in activity between whole stomach and mucosa by Castle's theory, assuming that "a secretion of the mucosa, possibly of the nature of an unnamed enzyme, had acted on the muscle, when the two were ground together, thus liberating the active hematopoietic agent."

A different interpretation of these results is now possible. It seems probable that when the mucosa and muscularis were ground together, prior to desiccation, the native pepsin present in the mucosa was adsorbed by the protein of the muscularis, so affording protection to the pepsin-sensitive antipernicious anemia substance also present in the mucosa.

The hematopoietic action of autolyzed yeast (the preparation used was vegex) cannot apparently therefore be due to the presence of the so-called extrinsic factor, as believed by Castle, nor is this hematopoietic factor apparently the same as the stomach principle or the liver factor, though it does resemble the latter in that it is thermostable and soluble in 70 per cent alcohol. A possible clue to the nature of the antianemic agent in autolyzed yeast is furnished by the fact that it is definitely more effective in "pernicious anemia of the tropics" than in addisonian pernicious anemia. The former is a much less severe condition and shows less damage of the gastric mucosa than addisonian pernicious anemia. It would appear, then, that autolyzed yeast is more effective when there is less damage to the secreting gastric mucosa. Is it possible that autolyzed yeast contains elements that are capable of stimulating the cells that elaborate the gastric antianemic agent or that these elements furnish material for the synthesis of the latter?

13. Klein, Louis, and Wilkinson, J. F.: Investigations on the Nature of Haemopoietin, the Antianemic Substance in Hog's Stomach: II. The Production of a Thermostable Haemopoietically Active Substance Similar to or Identical with the Antianemic Principle of Liver by the Action of the Thermolabile Haemopoietin on Beef, Biochem. J. **28**: 1684, 1934.

14. Sturgis, C. C.: Recent Development in the Treatment of Pernicious Anemia and a Consideration of the Etiology of the Disease, Middleton Goldsmith Lecture, New York Pathological Society, October 1930.

15. This has been disproved: Wills, Lucy: The Nature of the Haemopoietic Factor in Marmite, Lancet **1**: 1283 (June 17) 1933. Wills, L., and Naish, Alice: A Case of Pernicious Anemia Treated with Vitamin B_2 from Egg White, ibid. **1**: 1286 (June 17) 1933. Lassen, H. C. A., and Lassen, H. K.: Am. J. M. Sc. **188**: 461 (Oct.) 1934.

16. Goodall, Alexander: The Treatment of Pernicious Anemia by Marmite, Lancet **2**: 781 (Oct. 8) 1932. Davidson, L. S. P.: Autolyzed Yeast Products in the Treatment of Anaemia, Brit. M. J. **2**: 481 (Sept. 9) 1933.

17. Wills, Lucy: Treatment of "Pernicious Anemia of Pregnancy" and "Tropical Anaemia," with Special Reference to Yeast Extract as a Curative Agent, Brit. M. J. **1**: 1059 (June 20) 1931.

THE ANTIANEMIC PRINCIPLE IN STOMACH

Castle's theory supposes the active principle in stomach ("intrinsic factor") to be a hitherto unknown enzyme elaborated by the gastric mucosa and secreted into the gastric juice. The enzyme theory is based on (1) the conception of the necessity of a substrate, the "extrinsic factor," and (2) the fact that the active principle is thermolabile.

Morris and his associates,[18] on the other hand, have defined the antianemic principle in stomach as a hormone, because they have found it "dialyzable, exhaustible and to withstand chemical treatment known to destroy enzymes." They have looked on this substance as an internal secretion produced by the gastric mucosa and secreted externally as well.

There seems to be insufficient evidence at present to base any definite conclusions as to the nature of the gastric antianemic substance. There is an objection to each of these conceptions; the doubtfulness of the existence of the substrate or "extrinsic factor" is against the enzyme idea, while by its thermolability the active principle differs from most hormones.

Castle has stated that the active principle in gastric juice is destroyed by heating to from 60 to 70 C. for one-half hour or to 40 C. for forty-eight hours. In view of the fact that gastric juice is an acid solution of pepsin, which attains maximum activity at 40 C., it seems likely that when normal gastric juice was heated to 40 C. the antianemic principle was destroyed by peptic activity and not by this relatively low temperature.

However, most hormones can withstand boiling. The active principle in liver exhibits such a degree of thermal resistance. In this and other ways it differs from the active principle in stomach. The relationship between the antipernicious anemia principles in these two organs is at present not clear, though there is hardly any doubt that a very definite relationship exists. Present knowledge suggests that the stomach mucosa is the seat of production and that the liver stores active principle but does not form it. Is it possible that the thermostable principle in liver is a hormone and that the stomach factor is its precursor, or, alternatively, that the thermolabile factor in stomach is of the nature of a kinase through the action of which the active liver principle is formed? Certain experiments that have a bearing on this question will be described in another place.

It may be said that the antipernicious anemia factor in stomach mucosa presents a certain resemblance to insulin, since each is elaborated by a glandular structure, which also produces a digestive enzyme (pepsin and trypsin respectively), capable of exerting an antagonistic action.

METHOD TO IMPROVE STOMACH PREPARATIONS FOR THE TREATMENT OF PERNICIOUS ANEMIA

Sharp[3] and Sturgis and Isaacs[4] introduced the feeding of desiccated whole hog stomach, and Morris and his associates[18] injected concentrates of gastric juice and of the fluid pressed from animal stomach contents, in the treatment of pernicious anemia.

Since these materials contain an abundance of native pepsin, it seems probable that the latter could become activated under certain conditions, leading to the weakening or destruction of the antipernicious anemia factor. The conditions required for optimum peptic activity are an acid fluid medium and a temperature of about 37 C.

Morris employed large volumes of gastric juice or pressed animal stomach contents, which he concentrated to a small volume by vacuum distillation at 37 C. and injected intramuscularly at a single dose. At times a very potent material was thus obtained, as, for example, when a single injection representing originally 8 gallons of swine juice produced a prolonged reticulocytosis and a steady rise of the erythrocyte count of from 1.4 to 4.8 million in six weeks. Such a complete remission would be possible only after repeated injection of liver extract.

This result, however, was exceptional. Numerous instances of weak or inert preparations resulted from the use of the same material and the same method as had already yielded an active product. It seemed possible that Morris's failures might have been due to destruction of the antipernicious anemia factor by peptic activity.

Certain experiments have been performed with the object of removing or inactivating the pepsin in gastric juice, prior to concentration and purification. A preliminary report follows, describing briefly the results in two cases:

The pepsin content of normal gastric juice was removed by precipitation with acetone at the iso-electric point;[10] the process was carried out at around 0 C. to inhibit peptic activity. The pepsin precipitate having settled, the supernatant material was concentrated in vacuo at 37 C. to a reduced volume. After treatment with 50 per cent alcohol to remove reaction-producing substances, it was further concentrated to a volume suitable for a single intramuscular injection.

The first pernicious anemia patient received an intramuscular injection representing originally 540 cc. of gastric juice. On the third day, at a red cell level of 1.9 millions, the reticulocyte percentage was 24.5 and a number of nucleated red cells were found. The erythrocyte count rose to 2.8 millions on the tenth day and continued to rise to 3.7 millions at the end of three weeks. The count then remained stationary until brought to normal by intramuscularly administered liver extract. This patient had a rather severe local reaction.

The second patient, whose initial erythrocyte count was 2.8 millions, received a similar injection of concentrate. The reticulocytes numbered 21 per cent on the third day, with many nucleated red cells appearing from the third to the tenth day. The erythrocytes rose to 3.8 millions on the tenth day and to 4.4 millions on the twenty-second day. This patient was reported to have fever and malaise but no local reaction.

Further collaborative work on this subject is in progress. It is hoped that it will be possible to report on the applicability of the principle described to the preparation of extracts of stomach mucosa and of desiccated gastric mucosa, as well as of concentrates of pressed animal stomach juice, a material having no present commercial value.

SUMMARY AND CONCLUSIONS

1. Pepsin is antagonistic to the antipernicious anemia factor in stomach (Castle's "intrinsic factor"):

(*a*) The feeding of pepsinized ventriculin was ineffective in pernicious anemia.

(*b*) The feeding of depepsinized gastric mucosa, without the addition of beef, was effective in pernicious anemia.

18. This work is to be found chiefly in the following publications: Morris, R. S.; Schiff, Leon; Burger, George, and Sherman, J. E.: A Specific Hematopoietic Hormone in Normal Gastric Juice, J. A. M. A. **98**: 1080 (March 26) 1932; Am. J. M. Sc. **184**: 778 (Dec.) 1932. Morris, R. S.; Schiff, Leon; Foulger, J. H.; Rich, M. L., and Sherman, J. E.: Brit. M. J. **2**: 1050 (Dec. 10) 1932; Treatment of Pernicious Anemia, J. A. M. A. **100**: 171 (Jan. 21) 1933. Sturgis and Isaacs.[4] Sturgis.[14]

(*c*) The feeding of depepsinized gastric mucosa, incubated with dilute hydrochloric acid, without the addition of beef, was effective in pernicious anemia.

(*d*) The feeding of depepsinized gastric mucosa, incubated with dilute hydrochloric acid and pepsin, was ineffective in pernicious anemia.

(*e*) The feeding of normal gastric juice, peptically inactivated, was effective in pernicious anemia, without the addition of beef or other source of "extrinsic factor."

2. These experiments speak against the existence of an "extrinsic factor" as conceived by Castle.

3. Castle's basic experiments may now be explained by a mechanism which excludes the action of the so-called extrinsic factor. This is based on the demonstrated antagonism of pepsin toward the antipernicious factor and also on the known adsorptive capacity of protein for pepsin. Sturgis and Isaacs' experiments are similarly explained.

4. A new method for making oral and injectible stomach preparations is available in which the antagonistic action of pepsin is removed.

Medical Arts Building.

EFFECT OF PROGESTIN AND ESTROGENIC SUBSTANCE ON HUMAN UTERINE CONTRACTIONS

VALUE OF PROGESTIN IN THE TREATMENT OF HABITUAL AND THREATENED ABORTION

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Theoretical concepts of gynecologic endocrinology when applied clinically have proved very disappointing in the past. There have been so many optimistic theories expounded as to the value of hormones in the treatment of numerous disorders of the female genital tract, with almost an equal number of clinical failures, that gynecologists hesitate to place confidence in any of these claims. Recently certain definite advances have been made, the merit of which is beginning to receive recognition from even the more conservative gynecologists.

The increasing knowledge of the physiologic rôle of hormones during pregnancy and parturition has clarified our understanding of the mechanism of the onset of labor and the occurrence of spontaneous abortion.

The work of Fraenkel [1] in 1903, who demonstrated that the removal of the corpus luteum of the rabbit in early pregnancy resulted in absorption or premature expulsion of the fetus, offered a solid foundation for a series of important advances.

From the time the ovum is fertilized until the termination of labor, the complementary and also the antagonistic action of the estrogenic principle and progestin are constantly at work. Weichert,[2] Corner and Allen [3] and Clauberg [4] have demonstrated that progestin prepares the endometrium for the reception and nourishment of the fertilized ovum subsequent to the preliminary influence of the estrogenic principle. Allen and Corner [5] conclusively proved that progestin is necessary for the conservation of early pregnancy. Knaus [6] and Manzi [7] showed that progestin maintains the uterus in a state of quiescence during pregnancy and that the uterus becomes sensitive to preparations of the posterior lobe of the pituitary when the influence of the corpus luteum declines. Reynolds and Allen [8] inhibited estrus motility in rabbits with progestin. Hisaw [9] demonstrated the ability of progestin to nullify the effect of posterior pituitary extract. Estrogenic substance, on the other hand, sensitizes the uterus to the oxytocic principle of the pituitary, thus stimulating uterine contractions.[10] Parkes,[11] Kelly [12] and Zondek and Aschheim [13] were able to produce abortion in animals with excessive doses of estrogenic material. The manner in which the estrogenic principle sensitizes the uterus to the oxytocic principle of the posterior lobe of the hypophysis is not clear. It is still debatable whether it stimulates an increased production of this hormone.

The work of the Smiths [14] indicates that progestin maintains a physiologic balance of estrogenic hormone during pregnancy by promoting its excretion through the kidney when present in excessive amounts. This has not been confirmed. As gestation advances, the amount of estrogenic substance increases, reaching a maximum at term. In this way the balance between the estrus-inducing principle and progestin is disturbed; the estrogenic principle becomes dominant and sensitizes the uterus to the oxytocic principle of the posterior lobe of the pituitary gland and labor ensues. Allan and Dodds [15] and others expound this theory. We believe that the irritability of the sympathetic nervous system, the intrinsic nervous mechanism of the uterine wall and possibly the hormones from the thyroid or the adrenal glands are factors which play a part in the onset of labor. The degree to which these factors influence the onset of labor has not been demonstrated experimentally. Miklós [16] was able to prolong gestation in the rat with aqueous extracts of corpora lutea.

It is entirely possible that a deficiency of progestin or an excess of the estrus-producing hormone would

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1. Fraenkel, L.: Die Funktion des Corpus Luteum, Arch. f. Gynäk. **68**: 438, 1903.

2. Weichert, C. K.: Production of Placentomata in Normal and Ovariectomized Guinea-Pigs and Albino Rats, Proc. Soc. Exper. Biol. & Med. **25**: 490 (March) 1928.

3. Corner, G. W., and Allen, W. M.: Physiology of the Corpus Luteum: II. Production of a Special Uterine Reaction by Extracts of the Corpus Luteum, Am. J. Physiol. **88**: 326 (March) 1929.

4. Clauberg, C.: Experimentelle Untersuchungen zur Frage eines Mäusetestes für das Hormon des Corpus Luteum, Zentralbl. f. Gynäk. **54**: 1154 (May 10) 1930.

5. Allen, W. M., and Corner, G. W.: Physiology of the Corpus Luteum: III. Normal Growth and Implantation of Embryos After Very Early Ablation of the Ovaries, Under the Influence of Extracts of the Corpus Luteum, Am. J. Physiol. **88**: 340 (March) 1929.

6. Knaus, H.: Zur Ursache des Geburtseintrittes, München. med. Wchnschr. **75**: 553 (March 30) 1928.

7. Manzi, L.: Azione inibente degli estratti di corpo luteo sul travaglio provocato dagli estratti di lobo posteriore dell'ipofisi nelle varie epoche dell gravidanza, Arch. di ostet. e. ginec. **19**: 220 (May) 1932.

8. Reynolds, S. R. M., and Allen, W. M.: The Effect of Progestin Containing Extracts of Corpora Lutea on Uterine Motility in the Unanesthetized Rabbit, with Observations on Pseudopregnancy, Am. J. Physiol. **102**: 39 (Oct.) 1932.

9. Hisaw, F. L.; Fevold, H. L., and Meyer, R. K.: The Corpus Luteum: II. Methods of Extraction, Physiol. Zoöl. **3**: 135, 1930.

10. Brouha, L., and Simonnet, H.: Action du liquide folliculaire sur la contractilité utérine, Compt. rend. Soc. de biol. **101**: 366 (June 7) 1929. Bourne, A. W., and Burn, J. H.: The Synergistic Action of Oestrin and Pituitary Extract on the Isolated Uterus, Lancet **2**: 1020 (Nov. 17) 1928.

11. Parkes, A. S., and Bellerby, C. W.: Studies on the Internal Secretions of the Ovary: II. The Effects of Injections of the Oestrus-Producing Hormone During Pregnancy, J. Physiol. **62**: 145 (Dec.) 1926.

12. Kelly, G. L.: The Effects of Injections of Female Sex Hormone (Oestrin) on Conception and Pregnancy in the Guinea-Pig, Surg., Gynec. & Obst. **52**: 713 (March) 1931.

13. Zondek, Bernhard, and Aschheim, Selmar: Ovulation in der Gravidität, ausgelöst durch Hypophysenvorderlappenhormon, Endokrinologie **1**: 10 (Jan.) 1928.

14. Smith, G. V. S., and Smith, O. W.: The Rôle of Progestin in the Female Reproductive Cycle, J. A. M. A. **97**: 1857 (Dec. 19) 1931.

15. Allan, H., and Dodds, E. C.: Investigations into Cause of Onset of Labor, J. Obst. & Gynaec. Brit. Emp. **37**: 447, 1930.

16. Miklós, L.: Experimentelle Verlängerung der Schwangerschaft mittels Corpus Luteum-Extrakten, Zentralbl. f. Gynäk. **54**: 1755 (July 12) 1930.

result in spontaneous abortion or premature labor. Substitutional therapy with the corpus luteum hormone, therefore, should be indicated in cases of threatened and habitual abortion. In this paper we are concerned with (1) the management of these cases and (2) the effects of estrogenic substance and progestin on the contractions of the human parturient uterus.

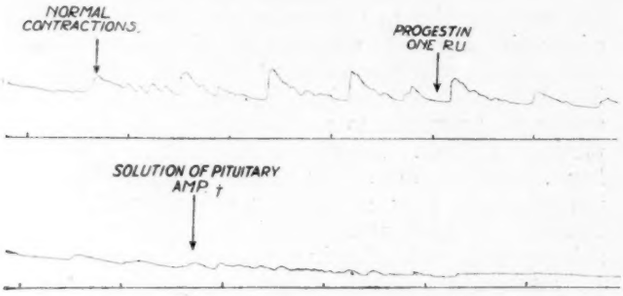

Fig. 1.—The effect of progestin on normal uterine contractions. Metreurynter bag introduced into the uterus, normal contractions initiated in about ten minutes. These were allowed to continue for twenty minutes, at which time 1 rabbit unit of progestin was injected. The contractions were reduced in strength within five minutes. After eighteen minutes one ampule of solution of pituitary stimulated very small contractions for ten minutes, after which no further contractions were noted. Time markers indicate five minutes.

Last November we [17] reported a series of nineteen cases of threatened and habitual abortion treated with a commercial preparation of progestin. Successful results were obtained in fourteen of these patients. Our clinical observations convinced us of the therapeutic value of progestin in these cases. Similar results have been obtained by Antecki and Zwolinski,[18] Wolfsohn [19] and others.[20] We have continued this investigation and now report forty-one cases of threatened and habitual abortion treated with progestin. Successful results were obtained in thirty-four of these patients, as shown in the accompanying table. In ninety-four previous pregnancies, sixty-five spontaneous abortions occurred. In the original series of nineteen cases we were able to follow a definite procedure, with one product given in predetermined dosage and at definite intervals. The amount of the hormone used originally was empirically 1 rabbit unit (Corner).

Patients with threatened abortion received 1 rabbit unit twice daily until all symptoms subsided or the patient aborted. In the treatment of habitual abortion 1 rabbit unit of progestin prepared and standardized according to the method of Corner, as described in a previous paper,[17] was given prophylactically twice

Results of Treatment

Group	Cases	Success	Failure
Threatened abortions only	11	10	1
Habitual abortions only	13	10	3
Threatened and habitual abortions	17	14	3
Total cases treated with progestin	41	34	7

weekly from the time the diagnosis of pregnancy was made until the thirty-second week of gestation. Unfortunately, the manufacture of our first preparation of progestin was discontinued in the midst of our series. However, the Schering Corporation was kind enough to supply us with a similar product standardized in Clauberg units. The doses of this preparation varied from one-twenty-fifth rabbit unit to 1 Clauberg rabbit unit according to the severity of the symptoms. The smaller doses seemed to be clinically effective, although we felt that the larger doses gave a greater margin of safety and should be used in the more urgent cases.

The clinical observation of patients treated for abortion left no doubt in our minds that progestin inhibits uterine contractions. Reynolds [8] inserted a bag into the uterine cavity of a rabbit through an artificial fistula and demonstrated inhibition of estrus motility with progestin. Novak and Reynolds [21] were able to decrease uterine motility in rabbits with ovaries intact and also in the castrated animal with a preparation of active principle of the anterior lobe of the hypophysis from human pregnancy urine. In order to demonstrate the inhibiting action of progestin in the human being experimentally, we adopted the method of Moir,[22] recently used by Adair and Davis,[23] Koff [24] and others. This consists of introducing a hydrostatic bag into the uterus of a seventh day parturient patient under sterile precautions. In our earlier experiments the bag was filled with air. We used a water system with a mercury manometer in our later work because we were thus able to maintain a more constant pressure. Kymographic

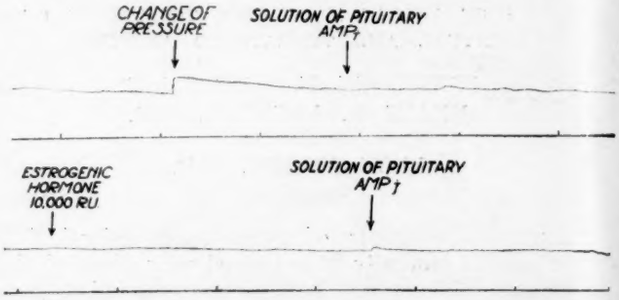

Fig. 2.—The influence of progestin in nullifying the action of solution of pituitary on uterine contractions when given one and three-quarter hours before. One rabbit unit of progestin was given one hour before the introduction of the hydrostatic bag. No uterine contractions occurred. About forty-five minutes after the introduction of the bag the pressure was increased in an effort to stimulate contractions; no contractions resulted. One ampule of solution of pituitary was given. Very weak contraction waves were seen. In sixteen minutes 10,000 rat units of estrogenic substance was injected to sensitize the uterine muscles to solution of pituitary. No contractions resulted. Eighteen minutes later a second ampule of solution of pituitary was given; no uterine contractions were stimulated. Time markers indicate five minutes.

tracings of the uterine activity were obtained in this way. Normal uterine contractions and the effects of solution of pituitary, estrogenic substance and progestin on the human puerperal uterus were investigated. The experiments were allowed to proceed for periods of two and three hours, during which time continuous tracings were made. Although the results were quite consistent, slight individual variations were noted.

RESULTS

Normal Control.—The normal response to the distended bag varied considerably in different individuals both in frequency and in intensity of the contractions. This variation appeared to have a relationship to the parity, the length of labor, and the physical make up

17. Krohn, Leon; Falls, F. H., and Lackner, J. E.: On the Use of the Lutein Hormone, Progestin, in Threatened and Habitual Abortion, Am. J. Obst. & Gynec. **29**: 198 (Feb.) 1935.
18. Antecki, S., and Zwolinski, T.: W sprawie poronien' nawykowych, Polska gaz. lek. **7**: 845, 1928.
19. Wolfsohn, H.: Therapie des habituellen Aborts, Med. Welt **6**: 1616 (Nov. 5) 1932.
20. Weinzierl, E.: Zur Frage des habituellen Abortus, Med. Klin. **29**: 563 (April 21) 1933. Bracht: Die Behandlung des habituellen Abortes, Therap. d. Gegenw. **74**: 551 (Dec.) 1933.
21. Novak, Emil, and Reynolds, S. R. M.: The Cause of Primary Dysmenorrhea, J. A. M. A. **99**: 1466 (Oct. 29) 1932.
22. Moir, C.: Clinical Comparison of Ergotoxine and Ergotamine, Brit. M. J. **1**: 1022 (June 4) 1932.
23. Adair, F. L., and Davis, M. E.: Study of Human Uterine Motility, Am. J. Obst. & Gynec. **27**: 383 (March) 1934.
24. Koff, A. K.: A Study of the Action of Ergot on the Human Puerperal Uterus, Surg., Gynec. & Obst. **60**: 190 (Feb.) 1935.

of the patient. Contractions of a definite regularity and intensity were established usually within twenty to thirty minutes.

Solution of Pituitary.—Following the administration of 1 cc. of solution of pituitary a marked tetany of the uterus appeared within three to five minutes. This tetany continued for from five to ten minutes and was fol-

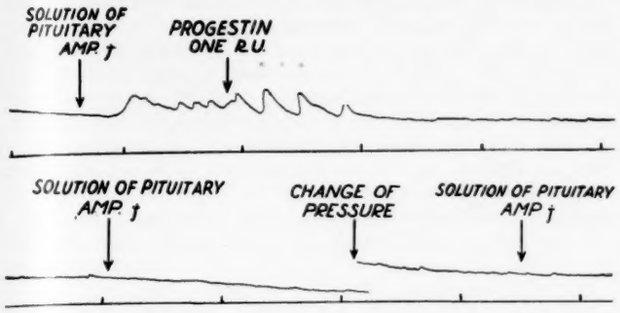

Fig. 3.—The effect of progestin on uterine contractions stimulated by solution of pituitary. One ampule of solution of pituitary was injected after the metreurynter bag had been inserted into the uterus. Tetanic contractions started in two and a half minutes. Six minutes later 1 rabbit unit of progestin was given as the tetanic contraction stimulated by the solution of pituitary began to be replaced by rhythmic contractions. In five minutes the rhythmic contractions subsided and the uterus failed to respond to two further doses of solution of pituitary. Time markers indicate five minutes.

lowed by regular rhythmic, vigorous contractions, which lasted for a variable length of time. It is interesting to note that during the time of the experiment the uterus usually failed to respond to a second dose of solution of pituitary.

Progestin.—The effect of intramuscular injections of progestin in 1 rabbit unit doses (Corner) on normal contractions and those contractions of the uterus produced by solution of pituitary was studied. Normal uterine contractions were completely inhibited in the great majority of cases. The effect was surprisingly rapid, beginning to show itself in from five to ten minutes and lasting for the entire two or three hours during which the tracings were recorded (fig. 1). We are unable to state how long this action persists because

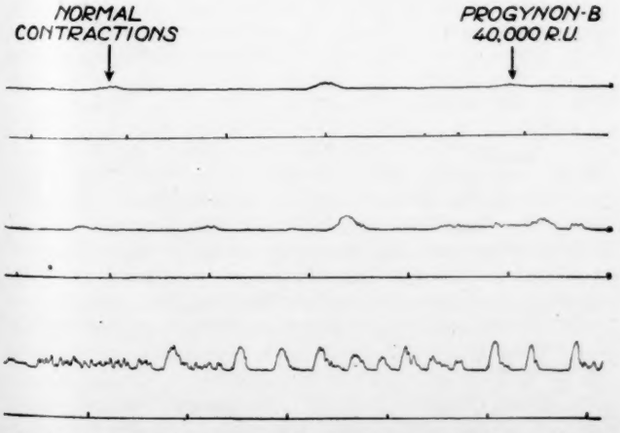

Fig. 4.—The effect of Progynon-B on uterine contractions. The bag was introduced and produced very slight contractions. It was allowed to act for approximately one-half hour; 40,000 rat units of Progynon-B was then injected. The contractions began to increase in frequency and amplitude in twenty minutes. The first effect was a series of tetanic contractions followed by rhythmic contractions, typical of action caused by solution of pituitary. Time markers indicate five minutes.

of the obvious difficulties encountered in utilizing patients for longer periods of time. In most instances the inhibitory effect obtained consisted of completely suspending all motility of the uterus. The powerful antagonistic action of progestin to solution of pituitary was demonstrated in several ways. Solution of pituitary elicited but little or no response while the uterus was in a state of quiescence from progestin (figs. 1 and 2). If progestin was administered during a reaction produced by solution of pituitary, contractions disappeared in from ten to twenty minutes (fig. 3). Attempts to sensitize the uterus to solution of pituitary with estrogenic substance failed during the period in which the uterus was under the influence of progestin (fig. 2).

Effect of Progynon B.—The effect of the estrogenic substance Progynon-B (Schering) was observed. Doses of 10,000, 20,000 and 40,000 rat units were administered intramuscularly after a satisfactory control of normal contractions had been recorded. No change in normal contractions was noted after 10,000 rat units had been administered. Twenty thousand rat units produced a moderate increase in intensity and frequency of the uterine contractions. Forty thousand rat units produced a tetany of the uterus one hour after administration, which lasted for about ten minutes. This tetany was followed by regular, frequent, vigorous contractions of the uterus for the duration of the experiment (fig. 4).

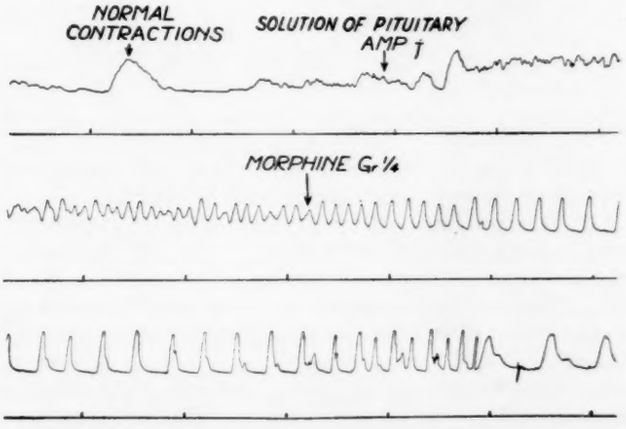

Fig. 5.—The effect of morphine on uterine contractions. Normal contractions stimulated by distention of the metreurynter bag. Injection of solution of pituitary produced tetanic contractions followed by rhythmic contractions of the uterus. Morphine, one-fourth grain (0.016 Gm.) hypodermically showed no inhibitory effect on uterine contractions. Time markers indicate five minutes.

COMMENT

Practically all the experimental studies of the effect of progestin on uterine contractions to date have been done with animals. Since we realized that the results of animal experimentation do not always hold in human beings, we felt that experimental evidence of the action of the estrogenic substance and progestin on the human puerperal uterus was of importance. The method of Moir [22] proved both safe and valuable in giving this experimental evidence. Little is known about the optimum amount of a given hormone to be used in treating a particular gynecologic condition. The dosages in these experiments were necessarily empirical. We realize that they were not absolutely accurate, although the material was fresh, because the methods of standardization used in assaying this material are open to error, and solutions of progestin are unstable. It would seem that this procedure offers an excellent method of studying the response of the human postpartum uterus to graded doses of hormones. From such studies one may learn how to apply endocrine therapy more intelligently in related clinical problems. One can gain con-

siderable knowledge of the efficiency and strength of estrogenic substance and progestin preparations in this way.

The effect of morphine on human uterine contractions was studied because it was probably the most common drug used in the treatment of threatened abortion previous to the advent of progestin. We were unable to demonstrate any inhibitory effect on uterine contractions stimulated by solution of pituitary with one-fourth grain (0.016 Gm.) of morphine sulphate given hypodermically, in spite of the fact that the usual narcotic effect on the patient was obvious (fig. 5). Indeed, the strength and frequency of the uterine contractions seemed to be actually stimulated by the drug. This observation confirms the work of other investigators and is important, since it explains certain clinical results obtained during labor after the use of morphine.

We do not know by what mechanism estrogenic substance augments the human uterine contractions. It may act directly on the uterine musculature or it may sensitize the uterus to the oxytocic principle of the posterior lobe of the pituitary present in the individual. It would seem that the latter is the more likely mechanism, because the type of response elicited resembled the reaction produced by the injection of solution of pituitary. Therefore until there has been similar investigation in the pregnant and the normal nonpregnant uterus, the results are of value only in the parturient uterus.

CONCLUSIONS

1. The use of progestin in habitual and threatened spontaneous abortion is logical and valuable.

2. Thirty-four of the forty-one cases of threatened and habitual abortion were treated successfully with the corpus luteum hormone progestin.

3. The estrogenic substance Progynon-B stimulates contractions of the puerperal human uterus in doses of 20,000 and 40,000 rat units.

4. One rabbit unit (Corner) of progestin inhibits human uterine contractions in a seventh day parturient patient.

5. One rabbit unit (Corner) of the lutein hormone progestin completely nullifies the effect of 1 cc. of solution of pituitary whether given before or after the response to the injection of solution of pituitary.

6. The hypodermic injection of one-fourth grain of morphine sulphate not only failed to diminish contractions of the human puerperal uterus produced by the injection of 1 cc. of solution of pituitary but actually seemed to augment them.

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ABSTRACT OF DISCUSSION

DR. SAMUEL R. M. REYNOLDS, Brooklyn: There is one aspect of this work which interests me especially; that is the action of progestin and of estrogenic substance on the uterine contractions as the authors demonstrated in the slides. Qualitatively these results confirm the rabbit data. They differ, however, in two important respects. As regards progestin in the human being, we have just seen that the effect is very prompt. In the rabbit, Dr. Willard Allen and I have just completed experiments in which we found that crystalline progestin inhibits uterine contractions, 1 rabbit unit requiring approximately one hour, and two tenths of a rabbit unit requiring approximately six hours. The authors have shown that estrogenic material induces rhythmic contractions of the human uterus within a few minutes. In the rabbit, with intravenous injections, at least ten to twelve hours must elapse before the beginning of the effect of the substance can be seen, and at least from twenty to twenty-four hours must pass before maximal motility is observed. I think that the differences between these results in the human being and our results may be explained, in part at least, by the fact that in their experiments the ovaries of their subjects are secreting the estrogenic principle, so that he is adding this substance to that already circulating in the blood stream. In our experiments we use the castrated animal with none of the substance circulating in the blood stream. From the data of the authors it would seem that 20,000 or 40,000 units of estrogenic substance induces uterine contractions. Data published by Drs. Robinson, Datnow and Jeffcoate indicate that in missed abortion, uterine inertia and attempts to induce premature labor, hundreds of thousands of rat units of the principle must be injected to induce uterine contractions, and then, to expel the products of conception or to induce dilatation of the cervix, the action of the estrogenic substance must be supplemented by quinine, extract of posterior pituitary or some other oxytocic agent. One must not be misled, therefore, by the small dosage that Dr. Falls and his co-workers find effective and expect such amounts to be uniformly effective under all circumstances.

DR. EMIL NOVAK, Baltimore: The general idea behind this plan of treatment seems a sound one, because of the accepted importance of the corpus luteum in the early phases of pregnancy and because of the inhibiting effect of progestin on uterine contractions. Furthermore, it seems safe to assume that the preparation employed is a potent one, for it is presumably the one with which Kaufmann, Clauberg and other German investigators were able to produce typical progestational changes in the endometrium, after preliminary treatment of the latter with estrogenic material. The surprising thing is that clinical results should be obtainable with the relatively small doses employed in this series, especially if it is recalled that a dosage of something like 60 rabbit units is necessary to produce the progestational picture in the human endometrium. The stronger ampules of the commercial preparation that was used by Dr. Falls and his associates contain only one fifth the European rabbit unit. For this reason, and because of the frequency with which the threat of abortion fails to materialize with no other treatment than complete rest and possibly simple sedatives, it is not easy to evaluate accurately the value of biologic agents in this condition. The same difficulty pertains to the treatment of the distressing cases of habitual abortion. And yet I believe this plan of treatment to be logical and worthy of continued trial, always in as critical and analytic a fashion as possible.

DR. J. P. PRATT, Detroit: I am greatly interested in this work of Dr. Falls and his associates, especially on account of the results obtained with the small dosage of progestin. It seems to check very well with the relative amount of progestin in the human being as compared to animals. In the hog corpora lutea I find a positive test, 1 rabbit unit in 20 Gm. of material, while in the human corpus luteum I have recently found (not yet published) that it takes about 75 Gm. of material to give a weakly positive test. That would correspond roughly to from fifty to seventy-five human corpora lutea for 1 rabbit unit. Therefore, under natural conditions the amount of progestin in the human corpus luteum is very small. It has been found by Gerhardt and others that there are 10 rabbit units present in the placenta. One wonders, therefore, just what effect the expulsion of the placenta and the fact that the corpus luteum is not actively secreting progestin at the time of delivery may have on the subsequent contractions during involution following labor and the expulsion of the placenta.

DR. LEON KROHN, Chicago: Frankly, we were very much surprised to note such a rapid inhibitory effect of progestin as mentioned by Dr. Reynolds. I am unable to offer any explanation except that the patients whom we used probably had normal ovaries and normal pituitary glands. As Dr. Pratt already pointed out, it may take only an insignificant amount of progestin to produce this inhibitory effect in the human being, since it is present in the human corpus luteum in such minute quantities. It must be remembered that when 1 rabbit unit of the corpus luteum hormone is administered, the total effect of this dosage is not obtained at any one time. It is most likely distributed over a period of at least several hours and probably longer. We are unable to state exactly how long the effect of

progestin lasts because of the obvious difficulty encountered in keeping a bag in the uterus for a period longer than two or three hours. Thus, the results obtained were actually produced by a much smaller amount than the total dosage administered. The effect of the estrogenic substance (progynon B) was not as rapid as that of progestin. No definite change in the character of the uterine contractions was noticed for a period of forty-five minutes from the time it was administered. Here too, when 40,000 rat units was administered, the stimulation was probably produced by a small fraction of that amount. We were surprised to find that the estrogenic substance augmented human uterine contractions, because we have attempted to induce labor with as much as 200,000 rat units given every two hours until five doses had been administered, without noting any definite effect. Dr. Novak indicated that one would not expect small doses of progestin to be effective in threatened and habitual abortion. Originally, we used 1 rabbit unit doses standardized by the method of Corner. Later, we used the European unit dosage, which is about one fifth as potent. We used larger doses in the more urgent cases of threatened abortion, and the smaller amounts were administered prophylactically in habitual abortion. Clinically, doses as small as one twenty-fifth of a European unit appeared to be effective. We have treated several cases of premature labor in which severe, regular contractions were completely stopped by administering 1 Corner unit twice daily. The question arises as to whether there is justification for treating a case of threatened abortion. Some authorities believe that it is an attempt on the part of nature to expel an abnormal fetus. Thus far, all the babies delivered in the successfully treated cases were normal. However, in two of the failures that aborted, the fetuses were abnormal.

CLINICAL USE OF CYCLOPROPANE AND TRIBROM-ETHANOL IN AMYLENE HYDRATE

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NEW YORK

Trimethylene, known as cyclopropane, was described by Freund [1] in 1882. It is an isomer of propylene, cyclic in structure, and is a saturated hydrocarbon which exhibits some characteristics of an unsaturated hydrocarbon. It is a colorless, mildly pungent gas with a molecular weight of 42.05 and a density of 1.46. It is marketed in steel cylinders, in almost pure form, at a pressure of 75 pounds per square inch, at which pressure it liquefies. In the percentage in which it is clinically used to produce anesthesia it is almost odorless.

Cyclopropane was first used experimentally for anesthesia in animals by Lucas and Henderson [2] in 1929. These observers, using a somewhat impure preparation, limited their work to animal experimentation. Waters, Rovenstine and their associates,[3] having received this agent in purified form, continued the experimentation on animals and extended the work to clinical administration. Extensive pharmacologic and physiologic investigations of this agent with electrocardiographic studies were carried out by Seevers and his associates [4] at the University of Wisconsin. Liver and kidney reactions due to its use were investigated and reported absent by Bourne and his co-workers,[5] of Montreal. Other reports of its clinical use have appeared in the literature since the first report from the University of Wisconsin in January 1934.[6] The present report is based on more than 900 administrations from October 1933 to June 1935.

Cyclopropane is a potent anesthetic gas producing unconsciousness in from twenty seconds to three minutes. It is pleasant to inhale when properly administered and causes no choking, burning or strangling sensations. It does not exhibit the characteristic tendency of nitrous oxide or ethylene to produce dreams or other vagaries of the psychic system. The awakening is extremely rapid and resembles the awakening after normal sleep. Laryngospasm may occur when cyclopropane is given in high concentrations. It probably produces more mucous secretion than nitrous oxide or ethylene, if patients have not received preliminary medication. Nausea, headache, dizziness and disorientation, in my experience, have been less with cyclopropane than with other inhalation agents.

Differentiation of the accepted stages of anesthesia is difficult, owing to the rapid action of the agent. Grave circulatory risks or extremely ill patients are safeguarded by the high oxygen percentage in the anesthetic mixture. The margin of safety has appeared greater with the use of cyclopropane than with that of any other agent at present in use. Passive breathing, according to Guedel's technic,[7] may be produced with little or no danger. This procedure is of value to the operator in surgery of the lung, gallbladder, diaphragm, stomach and liver and is very important when roentgenograms are indicated for ureteral or kidney visualizations when respiratory movements fog the picture.

Cyclopropane anesthesia has been attempted in laboratory animals by inhalation, insufflation and intravenous and rectal administration. It is not satisfactory when given intravenously or rectally. I have induced anesthesia in fifteen tonsil and adenoid cases with cyclopropane and oxygen by a closed technic and maintained it by cyclopropane insufflation. None were premedicated. Thirteen were satisfactory. In two the anesthesia was too light. This method was discarded because of expense. Practically it appears that the best form of administration of this agent at present is by a completely closed method with carbon dioxide absorption.

Cyclopropane may be administered with almost any form of apparatus from oral insufflation into the open mouth to the most elaborate closed endotracheal air ways with metered flow of various gases, accurately measured amounts of anesthetic vapors and carbon dioxide control. The use of the Flagg or Bennett inhaler, with or without preliminary medication, gave good results, but lack of carbon dioxide control and gross leakage made this technic prohibitive. It required several gallons of cyclopropane for a simple procedure.

Ordinary care against ignition or explosion hazard must be used with cyclopropane, for, like ether, ethyl chloride and other accepted agents, it is inflammable. No reports of explosions or flashes in clinical use have been found in the literature or communications to this time.

Surgical procedures of all types, including operations on the eye, central nervous system, thorax, abdomen, superficial operations, and obstetric, gynecologic and otolaryngologic operations have been performed with

Read before the Section on Miscellaneous Topics, Session on Anesthesia, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Freund, August: Ueber Trimethylene, Monatsh. f. Chem. **3**: 625-635 (July 13) 1882.
2. Lucas, G. H. W., and Henderson, V. E.: A New Anesthetic Gas: Cyclopropane, Canad. M. A. J. **21**: 173-175 (Aug.) 1929.
3. Stiles, J. A.; Neff, W. B.; Rovenstine, E. A., and Waters, R. M.: Anaesth. & Analg. **13**: 56 (March-April) 1934.
4. Seevers, M. H.; Meek, W. J.; Rovenstine, E. A., and Stiles, J. A.: J. Pharmacol. & Exper. Therap. **51**: 1 (May) 1934.
5. Raginsky, B. B., and Bourne, Wesley: Canad. M. A. J. **31**: 500 (Nov.) 1934.
6. Waters, R. M.: Personal communication to the author.
7. Guedel, A. E., and Treweek, D. N.: Ether Apnoeas, Anesth. & Analg. **13**: 263 (Nov.-Dec.) 1934.

cyclopropane anesthesia. This report covers all these types except operations on the eye and thorax. I have administered cyclopropane in various combinations with anesthetic gases and vapors, with or without preliminary medication, including basal narcotics, in 917 cases listed in table 1. In only nine cases out of the 917 was the attempted use of this agent a total failure. Five

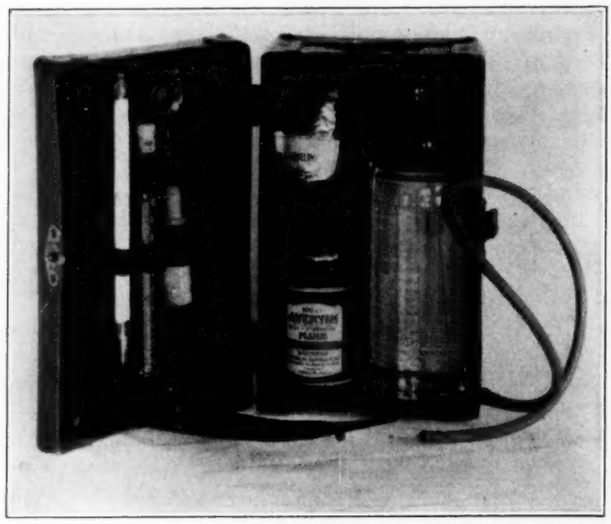

Fig. 1.—Outfit for apparatus used in the preparation and administration of tribrom-ethanol in amylene hydrate.

were in the first seventy, two in the next 150 and two in the next 500. More than 720 patients received cyclopropane and oxygen by a carbon dioxide absorption technic. Approximately 550 of these received preliminary medication of morphine sulfate, one-sixth grain (0.011 Gm.) with atropine sulfate, 1/150 grain (0.0004 Gm.) and a basal narcosis of tribrom-ethanol in amylene hydrate. About 350 of these were supplemented with ether to secure a greater degree of relaxation. The average amount of ether per patient was 5.7 cc. In no cases were there fatalities from this combination of agents. In two cases respiration was temporarily depressed below 14 per minute.

Tribrom-ethanol in amylene hydrate wherever used in this report refers to the 100 per cent solution marketed as "Avertin Fluid." One cubic centimeter of this fluid represents 1 Gm. of tribrom-ethanol and 0.5 Gm. of amylene hydrate. Tribrom-ethanol in amylene hydrate is used in this report only for producing basal narcosis and has been used by me in various combinations in more than 3,200 cases. From the extensive literature available regarding this drug it is obvious that a safe dose for general anesthesia is much greater than that required for basal narcosis.

The combined use of cyclopropane and tribrom-ethanol in amylene hydrate will prove satisfactory if three important factors are considered. These are careful selection of the patient, adequate apparatus for the administration of cyclopropane and tribrom-ethanol in amylene hydrate, and accurate timing of the anesthetic procedures.

To facilitate the preparation and administration of tribrom-ethanol in amylene hydrate, an outfit (fig. 1) is presented. It consists of a carrying case measuring 9 by 5¾ by 3½ inches, constructed of wood or fiber. On the door of this case is a rack which holds a special thermometer with only one reading indicated; namely, 40 C. This tends to eliminate error and calls attention to the very important factor of correct temperature. Next in the rack is a standard 10 cc. test tube, graduated in tenths (fig. 2). Also in the rack is a space for the congo red test solution. The body of the box contains the mixing and administering flask on the right. On the left there are two compartments, the lower one for the 100 cc. manufacturer's bottle of tribrom-ethanol in amylene hydrate. The upper compartment is intended for the cork, petrolatum and other accessories.

The flask is a stock "nasal douche bottle" with a wire hook snapped on to the small neck (fig. 2). It has a nipple in one side near the base for attaching the rectal tube. The rectal tube size is 24 or 26 French. The flask is made of thin, heat-resisting glass. Therefore changes in temperature of the contents may be easily and rapidly made by placing the flask under either the hot or cold water tap, as indicated. Etched into one side of the flask, in metric units, are three tables or scales. The scale at the left reads from 0 to 220 and represents pounds of body weight; the line opposite each figure shows how much water should be used for a person of that weight. The center table is graduated from 0 to 6.5 cc. and indicates the number of cubic centimeters of tribrom-ethanol in amylene hydrate to be used for the various weights. The table is so adjusted that at all amounts the mixture represents a 2.5 to 3.0 per cent solution of tribrom-ethanol in amylene hydrate. On the right is a table to be used only when this technic is not followed. It shows the number of cubic centimeters of water from 0 to 300.

The technic of using this apparatus is as follows: Tap water is run into the flask up to the line indicated by the patient's "relative weight" in the left scale.

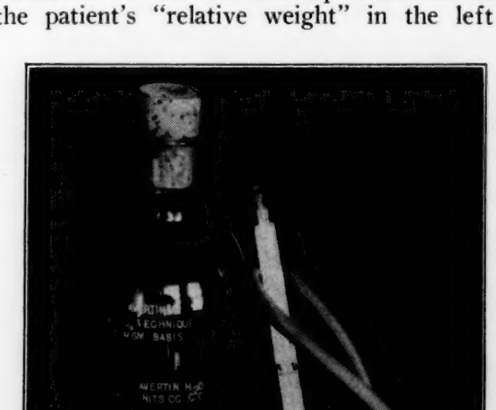

Fig. 2.—Mixing and administering flask with table for proper solutions.

(Tap water instead of distilled water has been used in all but two of my last 2,500 cases and has been found satisfactory.) The temperature of the water is then adjusted to exactly 40 C. On the center table is then read the number of cubic centimeters of tribrom-ethanol in amylene hydrate for the patient's weight, and this amount is measured into the test tube and poured into the flask. Tribrom-ethanol in amylene hydrate,

being thick and oily, adheres to this tube. To allow for this error it is necessary to add 0.2 cc. more than the indicated amount. Two drops of congo red test solution is added directly to the mixture in the flask, the cork stopper inserted, the delivery tube closed by catching the rectal tube in the wire hook on the neck of the flask, and the flask vigorously shaken for from

TABLE 1.—*Combinations of Anesthetic Gases and Vapors*

C_3H_6-	Air	2
C_3H_6-O		39
C_3H_6-O_2	Ethyl chloride	1
C_3H_6-O_2	Ether	37
C_3H_6-O_2	Morphine and atropine	33
C_3H_6-O_2	Morphine and scopolamine	7
C_3H_3-O_2	Morphine and ether	8
C_3H_6-O_2	Morphine and atropine butyl bromethyl barbituric acid basal	1
C_3H_6-O_2	Morphine and afropine butyl bromethyl barbituric acid ether	8
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate basal	378
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate, ether	360
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate-nitrous oxide	3
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate-nitrous oxide-ether	9
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate-ethylene	9
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate-ethylene-ether	11
C_3H_6-O_2	Morphine and atropine tribrom-ethanol in amylene hydrate-ether-chloroform	2
Total		917

two to ten seconds. This is necessary to produce a perfect mixture. The mixture will now be a milky pink and will be under pressure. The tip of the rectal tube is anointed with petrolatum and inserted into the rectum only far enough to permit free flow of the fluid. Petrolatum, although a lubricant, is sufficiently sticky to prevent expulsion of the rectal tube by a nervous patient and is therefore preferred to other lubricants. The rate of injection is only as fast as the liquid will flow by gravity, the time consumed being usually less than ninety seconds. Should a fecal plug obstruct the flow, the flask is again stoppered and vigorously shaken. Owing to the expansion of the warmed alcohol in the closed container, sufficient pressure is developed to expel the plug. Tribrom-ethanol in amylene hydrate should not be injected under pressure except in obstetric cases, in which the normal flow may be obstructed by the natural processes.

Variations suggested in the technic are as follows: Patients with systolic blood pressure of more than 160 or less than 100 mm. of mercury are given the mixture at a slower rate, from five to ten minutes being consumed for the injection. For normal, average patients the weight indicated on the table is taken as the patient's actual weight. The patient's "relative weight" is the actual weight adjusted so that for elderly patients one tenth of the total dose is deducted for each ten years of age over 50. In patients with increased metabolism, such as children, athletes, alcoholic patients and those with thyroid toxicity, the dose may safely be increased by 10 per cent, as this technic is based on minimal amounts. For patients of any weight over 220 pounds (100 Kg.), the same amounts of water and tribrom-ethanol in amylene hydrate are used as for patients weighing 220 pounds.

To arrive at this table, figures collected from 1,200 cases were plotted in the following manner: Groups of ten average surgical patients of like weights and for various operative procedures were used as units. These units were given different doses of tribrom-ethanol in amylene hydrate. A record was made of the dose per pound of body weight at which all of the ten in the unit arrived at the operating room with sufficient sedation to permit the introduction of a pharyngeal airway without stimulating a reflex or arousing the patient. The figures thus obtained for dose per pound of body weight (ordinate) were plotted against the body weights (abscissa), and the resulting curve is shown in figure 3. The largest dose in the entire series was 6.5 cc. of tribrom-ethanol in amylene hydrate. With this maximum dose, eight patients who weighed over 350 pounds (159 Kg.) exhibited satisfactory basal narcosis, although the heaviest, who weighed 408 pounds (185 Kg.) received only 46 mg. per kilogram.

The combined use of tribrom-ethanol in amylene hydrate and cyclopropane in detail is as follows:

1. A cleansing enema is administered the night before the operation; no enema the morning of the operation. A mild sedative may be used the night before operation.

2. One and one-half hours before the operation is scheduled, one-sixth grain (0.01 Gm.) of morphine sulfate with $\frac{1}{150}$ grain (0.0004 Gm.) of atropine sulfate is administered by hypodermic.[8]

3. From thirty to forty-five minutes before the operation, tribrom-ethanol in amylene hydrate is administered by the technic described.

4. The patient should remain quiet in a darkened room for twenty minutes after the instillation of the tribrom-ethanol in amylene hydrate.

5. When the patient arrives in the operating room, a pharyngeal airway is inserted and the anesthesia face mask is adjusted and tested for a tight fit. The rebreathing bag of the anesthesia apparatus is filled almost to distention with oxygen. From three to five inhalations of oxygen are permitted in order to hyperoxygenate the patient and to test for leaks. The oxygen

TABLE 2.—*Figures Taken from Graph of Minimal Dosage*

30 to 110 pounds	80 mg. per Kg.
110 to 130 pounds	76.5 mg. per Kg.
130 to 145 pounds	75 mg. per Kg.
145 to 190 pounds	70 mg. per Kg.
190 to 220 pounds	65 mg. per Kg.

All weights above 220 pounds to 408 pounds receive identical doses; i. e., 6.5 cc. of tribrom-ethanol in amylene hydrate.

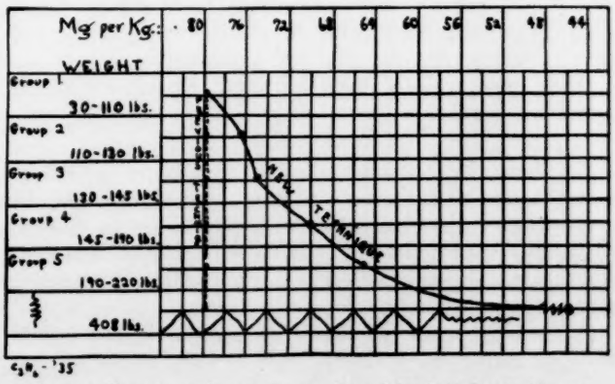

Fig. 3.—Chart to arrive at figures for minimal dosage (table 2).

flow-meter is regulated at from 250 to 400 cc. per minute as may be required to maintain the color of the patient and the distention of the bag.

6. Cyclopropane is flowed into the system at a rate of 600 cc. per minute for from fifteen seconds to five minutes. In 198 cases the average length of administration of cyclopropane, at the rate of 600 cc. per minute, to produce satisfactory surgical

8. Waters, R. M., and Schmidt, E. A.: Cyclopropane Anesthesia, J. A. M. A. **103**: 975-983 (Sept. 29) 1934.

anesthesia was two minutes and forty-eight seconds. If at any time during the operation anesthesia appears to be too light, cyclopropane is added at the same rate; i. e., 600 cc. per minute. Unmetered amounts of oxygen may be given at such times as cyclopropane is added. If relaxation is not satisfactory, ether may be added to the gaseous mixture.

7. Immediately on return to bed, all patients having received this combination of basal narcosis and cyclopropane maintenance are given a hypodermic injection of from 2 to 3 cc. of a 25 per cent aqueous solution of pyridine-beta carbonic acid diethylamide (coramine). This is a routine procedure which has proved valuable as a prophylaxis against postanesthetic respiratory and cardiac depression occasionally seen prior to our use of this drug.

Although tribrom-ethanol in amylene hydrate tends to depress respiration, and although excessive concentrations of cyclopropane depress it markedly, yet respiratory depression has been absent in all but two cases of this series.

DISADVANTAGES

1. More time is required of the anesthetist than by many other technics. This disadvantage is of minor importance, as the first consideration in any surgical or anesthetic procedure should be the safety of the patient. To secure this, the anesthetist should examine the patient before operation, order the preliminary medication, mix and administer the basal narcotic and continue with him until his return to bed.

2. Cyclopropane is inflammable, as are most of the general anesthetic agents used at present as a routine. Reports of more than 8,000 administrations show no case of fire, flash or explosion.

3. Special equipment, dependable gages for indicating minimal flow of gases, means for efficient carbon dioxide control and equipment that will not leak are essential.

4. Danger from technical error of administration is greater than with nitrous oxide or ethylene, because, although cyclopropane also is a gas, it requires a special technic for administration, owing to its marked potency.

5. The prohibitive cost of cyclopropane, when not administered by a proper technic, is a definite disadvantage.

6. The technic of combined tribrom-ethanol in amylene hydrate and cyclopropane anesthesia should not be used on patients exhibiting marked disease of the kidneys, liver or rectum. In these patients cyclopropane may be more safely used without tribrom-ethanol in amylene hydrate.

ADVANTAGES

1. There is an unusually wide margin of safety between the therapeutic and the toxic dose. Oxygen concentration is always very high. This is a great advantage, especially for patients suffering with anemia, starvation, shock, pulmonary or cardiac disease, or respiratory obstruction.

2. A wide range of depth of anesthesia is available without anoxemia, and the depth is easy to control.

3. Muscular relaxation is definitely increased over that possible with gases at present in use. This is especially advantageous for direct laryngoscopic intubation.

4. Marked contraction of the uterine muscle following cesarean section has been reported by several operators. In these cases cyclopropane and oxygen were used without preliminary medication or basal narcosis.

5. In the combined use of cyclopropane with tribrom-ethanol in amylene hydrate by the technic outlined, there has been a decrease in operative and postoperative morbidity in this small series over that with other technics that I have used.

6. The psychic advantage of tribrom-ethanol in amylene hydrate is marked, as no other method of induction of anesthesia is more pleasant to the patient. In addition, apprehension is reduced as the agent cyclopropane is not widely known and the few reports available are unusually favorable.

7. The combined use of these two agents is proving satisfactory to the surgeon, the patient and the anesthetist by providing an efficient, pleasant and safe anesthesia.

SUMMARY

Clinical results in more than 750 cases indicate this method has given greater satisfaction in the hands of the author than other methods.

131 Riverside Drive.

ABSTRACT OF DISCUSSION

DR. HAROLD R. GRIFFITH, Montreal: I entirely agree with Dr. Wood regarding the advantages of the combination of tribrom-ethanol in amylene hydrate with cyclopropane. I believe that the use of these drugs in combination forms the nearest approach yet made to the mythical ideal anesthetic. The only point on which I feel I must differ is in the routine administration of morphine before giving tribrom-ethanol in amylene hydrate. My experience has been that this is not necessary and that the combination of morphine, tribrom-ethanol in amylene hydrate and cyclopropane sometimes produces severe respiratory depression, which never occurs if morphine is eliminated. I prefer to reserve morphine for postoperative pain and restlessness. I have just reported a series of 1,108 personal administrations of cyclopropane and I need only say that my experience confirms the favorable reports of Waters, Wood and other observers. Dr. Wood has used tribrom-ethanol in amylene hydrate in 85 per cent of his cases. I have given it to 33 per cent of my total cyclopropane patients and to 43 per cent of those who were having abdominal operations. Dr. Wood used some ether in 49 per cent of his cases. I have not found this necessary in more than 5 per cent. Fifty-eight patients for cesarean sections to whom I have given cyclopropane and oxygen alone have had remarkable freedom from postoperative disturbance, and I have found cyclopropane equally satisfactory in all types of operative obstetrics. The use of cyclopropane has not increased the cost of anesthesia in our hospital. Efficient modern equipment has made possible the use of this gas at no greater cost than the ethylene and nitrous oxide formerly used.

DR. HENRY S. RUTH, Philadelphia: It appears to me that the question evolves itself around whether or not tribrom-ethanol in amylene hydrate is the most advantageous preliminary medicament for cyclopropane as an anesthetic agent. I noted that only little more than 8 per cent of the reported series were administered with the usual morphine-atropine or morphine-scopolamine combination, or alone, and that the remainder, or more than 91 per cent, were combined with the potent irreversible basal anesthetic. I have not felt the need for this high percentage of the basal anesthetics with cyclopropane, for I found that this drug has possessed sufficient inherent potency to cope with the majority of surgical requirements. Since cyclopropane produces no stimulation of the respiratory function and the basal anesthetic is depressive in this respect, I have been a bit apprehensive of diminished minute volume respiration with their combination, not so much as to the respiratory rate but chiefly with regard to the volume, with its attendant physiologic by-effect on the circulatory function. I have reserved this combination for patients who insisted on arriving at the operating room asleep or for patients in whom it seemed to me that it perhaps was best that they receive this combination to quiet them to this extent preoperatively. Employing 85 per cent of any one procedure is bearing on a routine. I have attempted to avoid any semblance of a routine

with either agent or method and have endeavored to have their selection coincide with the pathologic conditions present in the patient and the peculiar requirements of the operative procedure contemplated. I believe that the outstanding success reported by Dr. Wood with this combination is due to his huge experience with it; but I question the advisability of many others attempting this near-routine procedure. I believe that Dr. Wood cannot be commended too highly for his original and ingenious apparatus which so facilitates the administration of tribrom-ethanol in amylene hydrate.

SIR FRANCIS E. SHIPWAY, London, England: I am much interested in Dr. Wood's paper and would like to congratulate him on his extremely good results with tribrom-ethanol in amylene hydrate and cyclopropane. I should like to draw swords with Dr. Wood over the question of dosage of tribrom-ethanol in amylene hydrate. I believe that the important factor that governs the dosage is the temperament of the patient. Each case must be treated individually if it is desired to obtain loss of consciousness before induction of anesthesia. Tables of dosage governed by age and weight are apt to mislead.

DR. T. DRYSDALE BUCHANAN, New York: Dr. Wood and I have both used cyclopropane in connection with tribrom-ethanol in amylene hydrate preliminary or basal anesthesia. I have had exceptionally good results in those cases in which severe hemorrhage has occurred before operation. Dr. Yandell Henderson has suggested that the addition of oxygen in these hemorrhage cases in which there has been deprivation of oxygen carriers would render anesthesia just that much safer, so that in hemorrhage cases and also in the bad cardiac risks cyclopropane will be found particularly valuable. With regard to the morphine, I have also given it before the tribrom-ethanol in amylene hydrate and I think that it is largely a question of respiratory depression as to when morphine should be given. Two years ago Dr. Waters gave an elaborate résumé of the time at which morphine was given and of the acme of its action, and in the average case morphine reached its acme in an hour and a half. Therefore, if morphine is given half an hour before the tribrom-ethanol in amylene hydrate, one is getting two respiratory depressants with the morphine or the respiratory depressant action on the way up, whereas it is wanted on the way down, and therefore it is rather important to give morphine a long time before tribrom-ethanol in amylene hydrate is given.

DR. PHILIP D. WOODBRIDGE, Boston: Like Dr. Ruth, I was afraid of the depressing effect on the respiration of the combination of tribrom-ethanol in amylene hydrate and cyclopropane, so I was pleased to see Dr. Wood administer it to some fifteen or twenty-five patients. I feel that Dr. Wood has succeeded in striking a scale of very satisfactory doses for normal patients of varying weights. I agree with Sir Francis Shipway that in determining the dosage of tribrom-ethanol in amylene hydrate the patient must be individualized. Dr. Wood has made suitable provision for this in his description of the method. I have found too much respiratory depression when using cyclopropane after the liberal doses of barbiturates, morphine and scopolamine which are ordinarily used with nitrous oxide and with ethylene. Therefore the doses of these preliminary narcotics have had to be reduced drastically when cyclopropane is used. As a result, patients come to the operating room fairly well awake, a condition particularly distressing to those with marked thyroid toxicity. In these patients especially I have found the mental quieting effect of Dr. Wood's combination very advantageous. In the small number of cases in which I have followed Dr. Wood's technic I have found that the cyclopropane anesthesia has run more smoothly, and that troublesome effects, such as laryngeal spasm have been absent.

DR. PAUL M. WOOD, New York: The use of morphine sulfate was discussed by several persons. Waters showed three actions, excitement, depression and sedation, the latter being the one desired. It appears about one hour after hypodermic administration. Smaller doses were tried, and I am now using one-eighth grain (0.008 Gm.) doses with fair results. I received my first cyclopropane in October 1933. To avoid overdosage, minimal doses of tribrom-ethanol in amylene hydrate, ether, and other medications were used. Satisfactory uniform results were not obtained until the technic reported was adopted. In answer to Dr. Ruth, no technic should become routine. These 720 cases were seen during a period of nearly two years, in which time more than 2,200 anesthesias were given. I cannot answer the question about intratracheal technic, as I have used it in less than forty cases. Sir Francis Shipway states that one must allow for variations in individuals. True; but the reported scale was charted when every patient in the group of ten had sufficient sedation to permit the introduction of the pharyngeal airway. Thus many patients were more deeply asleep than necessary. Often if there was difficulty in proper placement of the airway the patient would rouse. Therefore the dose was small enough to avoid depression. I have the figures of cost in detail in ninety-two cases. Including morphine, atropine, tribrom-ethanol in amylene hydrate, soda lime and cyclopropane the average per case was $1.01. Temperamental patients do require special variations in dosage. Experiments to find out how many one-sixth grain (0.01 Gm.) doses of morphine were actually injected showed an average of less than 75 per cent. Of course reactions are variable, and larger or smaller doses given occasionally account for unusual results. I don't want to believe that a variation of a tenth of a milligram of tribrom-ethanol in amylene hydrate makes much difference in the individual case, but, when weight groups are analyzed from a total of more than 3,200 administrations, it is found that doses which vary on an average of only one or two tenths of a grain make the difference between success and failure. It is evident that any technic adopted should be strictly followed, especially by a new user.

ADDISON'S DISEASE FOLLOWING ADRENAL DENERVATION

IN A CASE OF DIABETES MELLITUS

J. M. ROGOFF, M.D.
CHICAGO

This case is reported primarily to illustrate the possible serious consequences of adrenal surgery as a therapeutic procedure. For a number of years I have maintained that, with the possible exception of adrenal neoplasm, present knowledge of these glands does not warrant surgical intervention with them as a means of treating disorders elsewhere. Every investigator experienced in experimental work on the adrenals in animals is familiar with the great risk to life that attends operations on these organs. Nevertheless, there appears to be an increasing tendency, on the part of surgeons, to operate on the adrenals or their nerves for the relief of various diseases. This is done on the assumption that these glands, especially by their secretion of epinephrine, play a significant rôle in those conditions. Such an assumption, however, does not have the support of indisputable experimental or clinical evidence.

In the case that is reported here briefly, an attempt had been made to benefit a diabetic individual by denervating the adrenal glands. Addison's disease developed, for which the patient was referred to me for treatment during a little more than the last five months of his life. The following condensed data from my records of the case are concerned mainly with this condition:

A letter received from the patient, a man, aged 25, May 1, 1935, stated that he had had diabetes for about five years. Right adrenal denervation was done in May 1934. The insulin requirement, on a constant diet, was decidedly reduced at first but soon rose considerably above the preoperation level (48 units) and finally came down to 60 units daily. His physician said that this was due to the fact that the other gland was working overtime to compensate for the one which had been denervated. He felt that another operation would probably effect a cure.

A few days after the second operation (left adrenal denervation in September 1934) the patient had a bad attack of nausea

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and vomiting and repeated attacks occurred for a period of several weeks. A commercial adrenal extract (eschatin) and also salt capsules were administered during these weeks. Then followed persistent fatigue. Early in December another prolonged attack of nausea and vomiting developed, lasting from two to three weeks. During both attacks the temperature rose and the blood pressure fell. He lost about 35 pounds (16 Kg.). The insulin requirement fluctuated at intervals. The commercial adrenal extract was continued without apparent benefit.

Following the second operation, the color of the skin became a "yellowish tan, a little yellower than a brown from the sun." There were black spots, like freckles, on the face, hands and body. Fatigue was easily brought on by slight exertion and he felt tired all the time.

Additional information was obtained from the physician who treated him in the hospital for his condition before he came under my observation. Abstracts of his letter, dated May 13, 1935, follow:

The first adrenal denervation was done May 25, 1934, and the second, September 25. Following his second operation the syndrome of adrenal apoplexy supervened; the temperature for a few days was as high as 105 and the pulse rate was as high as 120, nine days postoperatively. Respirations were rapid and he was extremely drowsy. Subsequently, while in the hospital during December 1934, a similar attack was present. In the meantime he had a very poor appetite, had a tendency to lose weight, felt rather fatigued most of the time and developed some pigmentary changes of the skin and some localized very dark brown areas of pigmentation, about the face and forearms particularly.

The blood count, April 29, was 5,410,000 red cells, hemoglobin 97 per cent, and 6,750 white cells. Blood counts had been known to be as high as this or slightly higher previous to his operations. His basal metabolic rate on his last visit was minus 17 per cent.

At the times he has shown acute symptoms of cortical insufficiency, besides the general supportive measures usually used, he was given relatively large quantities of commercial adrenal extract (eschatin) up to 30 cc. daily, which, it was felt, helped him considerably at those periods. Smaller doses, however, had not produced any effect that was obvious to the patient.

My first examination of the patient was made at his home, in consultation with the family physician, May 12, 1935. The following is a brief summary of the notes recorded on this visit:

The family and early history of the patient were of no special significance. The patient had had diabetes for about five years, which was well controlled by moderate dietary regulation and insulin. His attention was called to an article in a lay magazine, reporting a meeting of surgeons, in which denervation of the adrenal glands was recommended as a relief or cure for diabetes. Assured by a surgeon that no harm could result from the procedure, he submitted to an operation on one adrenal in May and the other in September 1934. Following the operations he experienced the train of symptoms previously described.

There was characteristic addisonian pigmentation of the skin, with dark (ebony-colored) freckle-like spots on the face, hands, arms and neck. He complained of marked anorexia, frequent attacks of persistent nausea and vomiting, fatigue and dizziness on slight exertion, and he always felt "tired and drowsy." He was restless during sleep. When he was unable to retain food his insulin dosage was reduced and he sometimes required orange juice to counteract insulin reaction. Otherwise, insulin requirement was usually about the same as before the operations. The systolic blood pressure was 96 mm., diastolic 84 mm. The costolumbar pressure index was ++ on the left side and — on the right. He had lost weight and although at times he felt much better he was progressively experiencing increasing severity and frequency of the more distressing symptoms; viz., asthenia and gastro-intestinal disturbances.

In addition to measures previously followed, administration of adrenal cortex extract (interrenalin)[1] was begun and the following treatment advised: Intravenous saline-dextrose solution in case of acute manifestations; increase of water intake; favoring the eliminative functions and prolonged, absolute rest.

The patient was in a subacute state of Addison's disease (complicating diabetes). The prognosis was extremely unfavorable. Survival for more than about six months was very doubtful unless regeneration of adrenal cortex would exceed the rate of degeneration. This was not probable in so advanced a condition as the case presented.

His progress was indicated by the following abstracts of communications received from the attending physician and from the patient and by notes on subsequent examinations of the patient.

May 24, 1935, he had another acute crisis, with vomiting, low blood pressure, and the like, which responded readily to intravenous saline solution, and he was able to return home from the hospital in a few days. May 29, the fasting blood sugar was 400 mg. per hundred cubic centimeters. June 6 it was recorded that the blood sugar went to 560 mg. one morning, recently. Added a midnight dose of 5 units of insulin. June 11, he was feeling stronger, eating better, was retaining food, and the appetite had improved. There was less frequent nausea and he had not vomited for some time. The color appeared lighter, but the ebony spots were prominent. There was some gain in weight. The blood pressure was 108-110/86-88; the costolumbar pressure index was + on the right, ++ on the left. Improvement appeared to be chiefly subjective. July 3 he had gained about 4 pounds (1.8 Kg.), he felt stronger, was eating very well and indulging more in moderate physical effort; the costolumbar index was ± on the right, + on the left. July 15 it was noted that within the past week there had been some nausea and anorexia; he fatigued more easily. July 21 the appetite was returning and he was again feeling somewhat stronger. July 29 the costolumbar index was — on the right, + on the left; the blood pressure was 98-102/84-86.

During August and September he continued in about the same condition, resting most of the time and occasionally experiencing mild symptoms followed by improvement. October 5 the blood pressure was 94 systolic, 80 diastolic; the costolumbar pressure index was + on the right, ++ on the left; he had been having considerable nausea and vomiting; recently he had a severe reaction following a very small dose of insulin (5 units); four glasses of orange juice failed to yield improvement, marked hypoglycemia developed and he was comatose for some hours. Evidently, he had aggravated an acute exacerbation of adrenal insufficiency by exaggerating the existing hypoglycemia with the action of insulin. Increased sugar intake and reduced insulin was advised until a higher blood sugar level was maintained. His condition apparently was becoming less favorable; asthenia was more pronounced; he continued to take salt and sodium bicarbonate. October 13 the patient was seen in the hospital; his condition appeared grave. There was profound asthenia, with persistent nausea and vomiting. The lips were dry. Dehydration was evident and he did not respond to the administration of saline-dextrose solution (intravenous and constant rectal routes). Acetonuria was present. The blood pressure was 88 systolic, 76 diastolic. The costolumbar index was — on the right, ± on the left. The patient was apathetic and somnolent, and obviously in a critical state. Glycemia was low. The intermitting of insulin and increased water and carbohydrate intake (saline-dextrose or levulose) were advised. Recovery from this exacerbation was very doubtful and he died October 18. Autopsy was not permitted.

COMMENT

The case presents all the characteristics of Addison's disease. The history indicates that this syndrome was superimposed on preexisting diabetes by surgical intervention with the adrenal glands. The surgical manipulations apparently resulted in occlusion of blood vessels and degeneration of the adrenal cortex. Such degeneration has been demonstrated to occur, experimentally, when the adrenal blood supply is interfered with. Animals subjected to operations creating serious circulatory disturbances develop acute, subacute or chronic adrenal cortical insufficiency comparable or identical

1. Rogoff, J. M.: Clinical and Experimental Studies on Adrenal Insufficiency and Addison's Disease and the Treatment of Such Conditions by Interrenalin, Proc. California Acad. Med., 1930; Diagnosis and Treatment of Addison's Disease, Canad. M. A. J. **24**: 43 (Jan.) 1931; Addison's Disease: Further Report on Treatment with "Interrenalin" (Adrenal Cortical Extract), J. A. M. A. **99**: 1309 (Oct. 15) 1932.

with Addison's disease.[2] Of course the coexistence of diabetes may be assumed to have been unfavorable for possible regeneration of the damaged adrenal cortex.

The patient was in a subacute condition of adrenal cortical insufficiency when seen May 12. At that time it appeared that he would survive probably not more than about six months. This prognosis was based on the existing evidence of advanced adrenal cortical insufficiency, indicating extensive and progressive degeneration of the glands. The development of ebony colored small spots in a patient with Addison's disease is associated with irreparable damage to the cortex of the adrenals, and an inevitably fatal outcome may be expected to occur approximately six to eight months from the time of their appearance. For this reason it was doubtful whether sustained benefit would be derived from administration of adrenal cortex extract or, indeed, from any other known treatment, especially in a case associated with diabetes.

The gravity of the condition was indicated further by the repeated exacerbations and by evidence of progressive adrenal degeneration as interpreted from the costolumbar pressure reaction, which I have suggested as a significant symptom.[1] The presence of this sign in Addison's disease may be interpreted as evidence of active inflammatory or degenerative processes in the gland. Cessation of these processes is followed by disappearance of the symptom, and its reappearance indicates renewal of the process. If after having been observed repeatedly the sign finally disappears, as it does often in the late stage of the disease, it has been found generally that the gland has practically entirely degenerated or fibrosis has terminated the process.

This case illustrates the serious danger of attempting adrenal surgery for the correction of various ailments supposedly related with disturbed adrenal function. Such supposed relations are entirely hypothetical and are not supported by tenable evidence. At any rate, the surgical procedures that have been employed should not be expected to be of permanent benefit, since denervation of the gland by section of its nerves is usually followed by regeneration of the nerve supply within a few weeks. Excision of one gland, as has sometimes been attempted, is subject to the same criticism, for it is well known that compensatory hypertrophy and hyperplasia or functional compensation commonly occurs in a remaining organ when its mate has been removed from the body.

The course and outcome in this case strongly support the contention, repeatedly made by me since 1918, that surgical intervention with the adrenals for various conditions (Raynaud's disease, spontaneous gangrene, hypertension, epilepsy, gastric ulcer, thyroid disease, diabetes, and the like) is to be deprecated. The very fact that it is alleged to be of benefit in so great a variety of diseases ought to render the practice suspect.

2. Rogoff, J. M.: Experimental Production of Chronic and Subacute Adrenal Insufficiency in Dogs and Cats, Proc. Soc. Exper. Biol. & Med. **29**: 1240 (June) 1932.

Psychologic Concepts.—However much we may argue that psychology is a science in its own right and may use its own language, the very fact that human creatures, even on the very slenderest evolutionary hypothesis, cannot be alienated from their animal relatives and ancestors makes it obligatory to fashion our psychological concepts so that they shall be in accordance with basic biological principles. This is surely the case with the freudian psychology, which rightly claims to be a genetic psychology rooted in the instinctual life.—Miller, Emanuel: The Present Discontents in Psychopathology, *Lancet* **1**:245 (Feb. 2) 1935.

DISAPPOINTING RESULTS FROM THE IONIZATION TREATMENT FOR HAY FEVER

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The recent widespread interest in ionization in the treatment of hay fever may in part be explained by the number of favorable reports that have appeared in some medical journals during the past few years. This is particularly true of the extremely encouraging results reported by Warwick,[1] who employed a solution containing zinc, stannous sulfate and cadmium sulfate.

In compliance with numerous requests from physicians interested in this work, my associates and I at the Department of Immunology of the French Hospital undertook to study a series of cases, using the technic recommended by Dr. Warwick. It was our desire to give the treatment a fair, impartial trial. Our disappointment with the results obtained, and our disagreement with views expressed by others, make it necessary to record this report. In a recent article Dr. Warwick states that, covering a period of seven years, he has found intranasal ionization, using his special solution, the most satisfactory method of desensitizing to foods as well as to pollen; he asserts that the reactions are not only local but also systemic.

However, Haseltine[2] says: "For the treatment of nasal irritations arising from intrinsic causes it has probably no value." (This refers to intranasal ionization in general, not specifically to the Warwick method.) "It is not a treatment for the basic systemic disturbance underlying the hay fever-asthma syndrome; therefore to recommend it as a treatment for allergy or to imply that it can modify the underlying constitutional state is misleading."

Our series consisted of seventy-five cases. Of these fifty were true (seasonal) pollen cases, so-called hay fever, and twenty-five were cases of nonspecific perennial vasomotor rhinitis that did not give a positive skin reaction to allergens ordinarily used in testing.

In the group of nonspecific perennial vasomotor rhinitis, twenty-five cases, we feel that there was evidence of benefit and that the vast majority were improved.

In the hay fever series (seasonal pollinosis), fifty cases, the treatment was a complete failure in every case. In group 1, patients were given the Warwick ionization treatment before the expected date of pollination. One week later they were tested by permitting inhalation through the nose of a very small amount of pollen to which a positive skin test had previously been obtained. All had severe symptoms of hay fever immediately.

In group 2, ionization treatment was given as in group 1 before the date of pollination, but the inhalation test was performed two weeks later. All had severe symptoms immediately.

In group 3, ionization treatment was given as in groups 1 and 2 before the expected date of pollination (four weeks before), but instead of testing them by inhalation of pollen we allowed them to go without

1. Warwick, H. L.: Treatment of Hay Fever and Its Allied Conditions by Ionization: Preliminary Report, Laryngoscope **44**: 173-181 (March) 1934; Desensitization of Nasal Mucous Membranes for Relief of Hay Fever, Asthma and Food Allergy, Texas State J. Med. **30**: 210-215 (July) 1934.
2. Haseltine, Burton: Ionization in the Treatment of Nasal Hyperesthesia, Eye, Ear, Nose & Throat Month. **13**: 257-261 (Aug.) 1934.

further treatment in order to observe whether or not they would have symptoms as in previous years when pollen appeared in the air. Every case showed symptoms of hay fever as soon as the season started identically as in previous years when no treatment had been given.

In group 4 the patients were treated by the Warwick ionization method during the season while they were suffering with acute symptoms. In no case was there any relief.

Passive transfer tests performed with the serum of several of the hay fever patients showed no variation whatever following ionization treatment.

CONCLUSIONS

1. In my opinion the intranasal ionization treatment for hay fever has no merit.
2. Intranasal ionization is of benefit in the treatment of nonspecific perennial vasomotor rhinitis.

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TRAUMATIC FLAIL ELBOW

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OTTAWA, ONT.

In a review of the literature [1] of elbow injuries, one is impressed by the comparative rarity of flail elbows. Most of those presented have been the result of gunshot injuries.

The classification as well as the treatment of this condition depends to a large extent on whether the disability is due to (1) a loss of bone forming the joint with good practical muscle and nerve control, i. e., an active flail joint, or to (2) loss of bone with loss of practical muscle and nerve control; i. e., a passive flail joint.

The absence of bone in the elbow region may have been the result of gunshot injuries or any traumatism or resections for tumors or disease, or as the result following attempts at arthroplasty. The bone may have been removed from (1) the lower end of the humerus, (2) the upper end of the ulna alone or with the radius, or (3) any combination of these.

The passive flail joint is best remedied by fusion in the optimal position obtained by different methods, depending on where and to what extent the bone loss has taken place, following the principles of bone growth as outlined by Leriche and others. Pronation and supination should be maintained when only the lower end of the humerus is absent and restoring this movement, which is usually lost when the upper end of the ulna and radius has been damaged.

The active flail joint, i. e., when one has to contend only with loss of bone as the cause of lack of stability, particularly lateral stability, can best be improved by restoring the normal shape and size to the bone ends in order to give better contact for resistive pressure during active movement as well as places for attachments of muscles that will approach or even improve on their normal leverage action. In flail elbows in which the olecranon process has disappeared, Dr. Albee slides a graft up from the ulna, reforming this process and giving an insertion for the triceps muscle, which can again have its normal action as an extensor of the elbow. This has been a great advance and to a marked degree has solved the problem of active flail elbows.

It has been stated that bones are useful in the measure in which they separate the origin of muscles from their insertions. In flail elbows the bones do not perform this service adequately. They slide by one another or override, owing to their altered shape and diminished size. In order to give a broad, firm joint surface of contact for resistive purposes and insuring lateral stability, both of which are lacking because of the narrowed and pointed lower end of the humerus, a very simple procedure has been successful, which will be described along with the case report and as far as I know is original with me.

REPORT OF CASE

A man at the age of 29 years sustained a compound infected fracture of the left elbow in an automobile collision. At the time of the accident, or following it, 2½ inches of the lower end of the humerus was removed, also the olecranon process of the ulna. On my first examination, one month after the accident, the elbow was swollen and discharging pus. The end of the humerus was square but later became pointed (fig. 1). The Orr method of antiseptic rest in a cast from the palm to the axilla was used and the wound was healed in four months, but the elbow remained flail and useless. The muscles and nerves were intact (active flail elbow).

June 19, 1934, four years from the date of the accident, the left elbow was operated on. Through a midline posterior vertical incision, the ulna nerve was dissected free from the scar tissue and placed to the inner side. The triceps was freed from its attachment to the fibrous tissue covering the lower end of the humerus. The lower end of the humerus was sawed off square (fig. 2*A*) and then with a chisel the lower end of

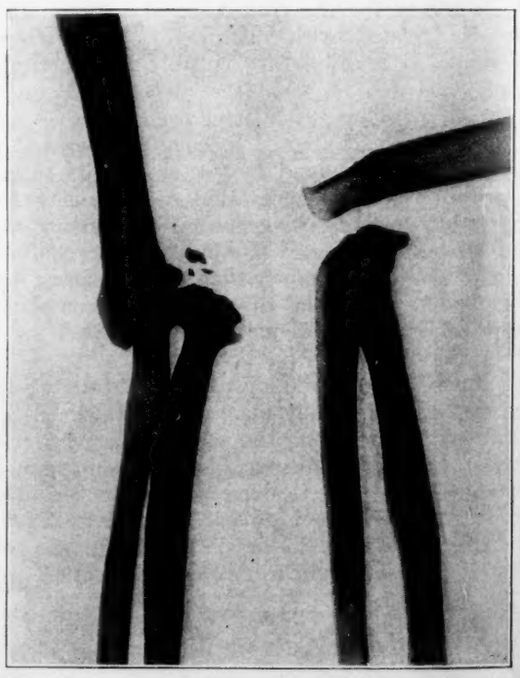

Fig. 1.—Flail elbow before operation.

the shaft was split vertically into lateral halves and forced apart. The free piece of bone, which was previously the pointed lower extremity, was placed in the crevice, which was widened sufficiently to give a width to the lower end of the humerus equal to the normal (fig. 2*B*). The next step was placing drill holes in the upper end of the ulna, as well as drill holes along the sides of the ulna in its upper third, extending to the medullary cavity. With a chisel, a sliding graft (as described by Dr. Albee) was made, bordered on each side by

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Read before the Section on Orthopedic Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

1. von Dittrich, Klaus: Deutsche Ztschr. f. Chir. **164**: 315 (July) 1921. Massart, R.: Lyon. chir. **16**: 207-224 (March-April) 1919. Ryerson, E. W.: S. Clinics Chicago **3**: 841-844 (Aug.) 1919. Platt, H.: J. Orthop. Surg. **1**: 667-672 (Nov.) 1919. Stoney, R. A.: Dublin J. M. Sc., October 1920, pp. 367-374.

the two rows of drill holes. Beginning below about the middle of the ulna, it was pushed upward and behind the now broadened end of the humerus and was held in its bed by kangaroo tendon sutures, passed through the lateral rows of drill holes (fig. 2*C*). The triceps was now attached to the upper end of the graft and the skin closed with silkworm gut (fig. 2*D*). A cast was applied from the palm to the axilla, with the elbow at an angle of 145 degrees. This cast was changed and the stitches were removed in four weeks. A second cast was

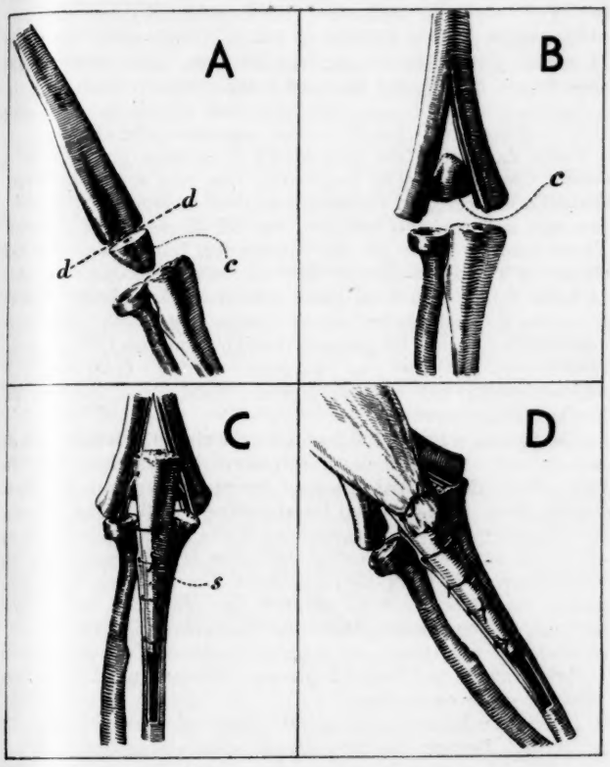

Fig. 2.—*A*, lower end of humerus sawed off square at line d—d. *B*, loose piece of bone in crevice to maintain width. *C*, sliding graft pushed upward from ulna to reform olecranon process. *D*, triceps attached to ulna graft.

applied with the elbow at an angle of 100 degrees and worn for four weeks longer. The patient was then allowed to use the joint. The elbow has remained stable and painless since, and the range of active motion is between an angle of 85 and 175 degrees and is slowly increasing.

At examination, one year after the operation, the flexor and extensor muscles were able to function normally and the patient could perform the usual movements with ease and perfect coordination. He is able to lift a load and control it, during the different movements, practically as well as before the accident.

CONCLUSION

It is of interest to note that (1) only local bone was used and (2) the ends of the bones were not covered by fascial flap or transplant.

ABSTRACT OF DISCUSSION

DR. EDWIN W. RYERSON, Chicago: This is one of the best results that I have ever seen in this kind of an injury. At Fort Sheridan, after the war, we had a number of flail elbow cases exactly resembling this one, and in all the lower end of the humerus had become pointed. No possible solution except such a solution as Dr. Murray has described is adequate if one wants to preserve a movable elbow joint. The question then always arises as to whether by some ingenious carpentry work, such as Dr. Murray has done in this case, a better result can be obtained by simple fusion of the elbow joint. Dr. Murray made no mention of inserting any lateral ligaments, and this elbow joint functions so extremely well that it is evident that there is no need to manufacture new lateral ligaments. I don't recall any procedure in which the splitting operation of the lower end of the humerus was done in the way Dr. Murray has performed it, and the result speaks for itself. The preternatural movement or mobility of these elbows is the remarkable feature of them. I have had several patients who could twist up the elbow joint two or three times. One of them could make four twists. The other feature is that almost all these elbows are painless, and many of the patients seem to prefer the wearing of an apparatus, a laced leather splint above and below the elbow joint, with a hinge at the elbow. Many of them who do not desire operation, or in whom it is undesirable, get along really quite well, and, as Dr. Murray indicated, many such patients are willing to go through life with an ankylosed elbow. But such a procedure as Dr. Murray's is an inspiration to keep on trying to preserve movable elbows. The procedure, which was original with Dr. Albee, of sliding a graft upward from the ulna, deserves credit. When it is a little longer than Dr. Murray made it in this case, it provides fine leverage and makes powerful extensor action in the elbow.

DR. GEORGE I. BAUMAN, Cleveland: A flail elbow results usually from the removal of an excessive amount of bone in an arthroplasty operation. In the experience of some operators, this obtains so frequently as to cast the operation into undeserved disrepute, undeserved because most of us, I think, are more apt to obtain insufficient rather than excessive mobility after an arthroplasty operation. Three methods are available for the treatment of a flail elbow: (1) an arthrodesis of the humerus and ulna, (2) tying these two bones together by fascia or tendon and (3) lengthening or altering the shape of the bones so as to bring them into contact. Owing to the lack of contact between the humerus and the ulna, the muscles about the elbow attempt to operate under a distinct mechanical disadvantage. As a result of an ingenious method of altering the shape of the distal end of the humerus and of lengthening the ulna, Dr. Murray's patient obtained active motion of from 85 to 175 degrees. Other operators have reported an increase in stability after tying the ulna and the humerus together with autogenous fascia grafts. If it should be necessary to alter Dr. Murray's excellent technic to fit the requirements of some other case, the possibility of inserting a section of radius into the ulna or of adding it on to the ulna should be considered. The tendon of the palmaris longus in the same arm could be cut at its insertion, reversed, and used to tie together the ends of the humerus and ulna reshaped by Murray's method.

DR. J. M. MURRAY, Ottawa: When I was a student in the Montreal General Hospital, Dr. George Armstrong, then professor of clinical surgery at McGill, presented a case of flail

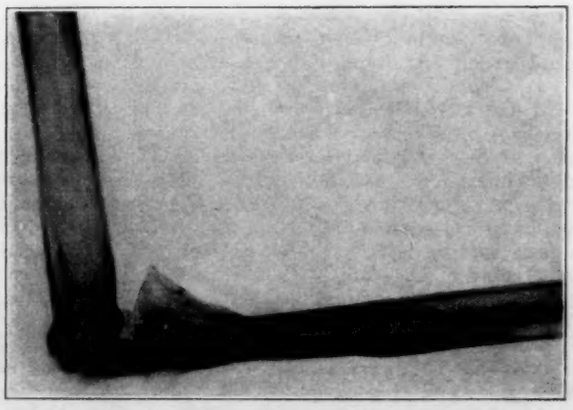

Fig. 3.—Appearance of elbow after operation.

elbow which he was able to improve by transplanting the metacarpophalangeal joint of the little finger to the elbow. The metacarpal was inserted into the humerus and the phalanx into the ulna, cross pegs being used to prevent rotation. About this time Professor Erich Lexer of Freiburg was doing work on transplantation of complete joints. This particular man was able to carry on as a painter. I don't think that Dr. Armstrong ever reported this case, and I could not obtain any records of it in the Montreal General Hospital.

TETANY IN AN ASTHMATIC PATIENT FOLLOWING THE ADMINISTRATION OF EPINEPHRINE

READ ELLSWORTH, M.D.
AND
WILLIAM B. SHERMAN, M.D.
BALTIMORE

The occurrence of tetany under circumstances similar to those found in the present case has not been noted in this clinic before, and we cannot find in the literature any description of such a case. Considering the frequency of the underlying condition, asthma, it is possible that the situation described herein may occur unobserved. In order to call attention to the occurrence of tetany following the injection of epinephrine in an asthmatic patient, the present case is reported.

REPORT OF CASE

B. F., an unmarried white houseworker, was first seen in the dispensary April 28, 1931, complaining of nasal obstruction. She was then 41 years old. There was no family history of allergic diseases. Her past health had been good except for diphtheria as a child and rheumatism at the age of 30 years. For five years before coming to the hospital she had sneezing attacks, a profuse watery nasal discharge and intermittent obstruction of the nares. There was no seasonal variation in the symptoms. Two years before she was seen at the clinic she began to cough, chiefly at night, and developed attacks of asthmatic wheezing. This was not noticeably related to contact with any food, drug, flower, animal or cosmetic.

The patient was small and well nourished, and was not apparently ill. The nostrils were almost completely closed by polyps and the turbinates were enlarged. There was a small amount of adenoid tissue. The tonsils were not enlarged. The frontal sinuses transilluminated clearly, but the antrums were dark. The lungs were resonant and the breath sounds vesicular, with a few wheezing râles. The heart was not enlarged. The sounds were regular and clear, with no murmurs. The radial arteries were slightly thickened. The blood pressure was 210 systolic, 110 diastolic.

The blood Wassermann reaction was negative. The urine contained a trace of albumin and a few casts. The skin tests with pollens and inhalants were negative except for a mild reaction to orris root and mixed feathers.

During the next three years she had repeated operations for nasal polyps and sinusitis. Most of these were followed by relief of the nasal obstruction and the asthma for a period of one to two months; then a recurrence of all the symptoms took place, but they were always relieved by epinephrine.

After a radical opening of the ethmoid and sphenoid sinuses in November 1934, she noticed that the administration of epinephrine during the asthmatic attacks was followed by spasms of the hands and forearms with a sense of numbness and tingling in the extremities. The asthma was promptly relieved by epinephrine. Because of the unpleasant sensations it produced she began to avoid the use of epinephrine, despite the fact that she had moderately severe attacks of wheezing almost every night. March 25, 1935, she was readmitted to the hospital for the treatment of sinusitis.

The physical examination then showed but little change from that previously described. The blood pressure was 196 systolic, 110 diastolic. The heart was not enlarged. The sounds were slow, regular and of good quality. No murmurs were heard. The blood count gave hemoglobin 112 per cent, red cells 5,700,000, white cells 9,300. The differential count was 70 per cent neutrophils, 5 per cent eosinophils, 22 per cent lymphocytes and 2 per cent monocytes. The urine showed a trace of albumin and occasional casts. The blood Wassermann reaction was negative. The nonprotein nitrogen of the blood was 30 mg. per hundred cubic centimeters. The phenolsulfonphthalein test showed 87 per cent excretion in two hours.

March 25 the nasal septum was partially resected, and on March 30 a bilateral radical drainage of the antrums was done. She made a good recovery and during her stay in the ward had only four mild asthmatic attacks.

During the first of these attacks she was given 0.1 cc. of epinephrine solution by hypodermic injection. The asthmatic symptoms were relieved promptly, but with the relief of the asthma she developed obvious active tetany with typical carpal spasm. This attack of tetany lasted only a few minutes. Venous blood taken at that time (near the end of the attack) and prevented from clotting by heparin showed a carbon dioxide combining power (van Slyke and Cullen) of 80 volumes per cent; chlorides (plasma), 102.1 milliequivalents per liter of plasma; sodium (plasma), 144 milliequivalents per liter of plasma; calcium, 10 mg. per hundred cubic centimeters; phosphorus, 2.7 mg. per hundred cubic centimeters.

During the three days following this attack the Chvostek sign was negative. No Trousseau sign could be elicited.

Three days after the first attack of asthma in the ward a second one began. The respiratory rate was somewhat rapid. Auscultation revealed numerous musical wheezes in the chest. She was not markedly cyanotic, but her distress was apparent. There was no spasm of the extremities, but a pressure cuff elicited a Trousseau sign in sixty seconds. She was in a state of latent tetany. Arterial blood collected anaerobically showed a carbon dioxide content of 68 volumes per cent, 27.9 milliequivalents per liter of plasma; chlorides (plasma), 102.1 milliequivalents per liter of plasma; sodium (plasma), 139 milliequivalents per liter of plasma; phosphorus, 2.7 mg. per hundred cubic centimeters.

The patient was given 0.2 cc. of epinephrine solution. There was prompt relief of her respiratory distress, but with the relief the typical carpal spasm of active tetany again appeared. Examination of the arterial blood obtained at this time (during the active tetany) gave approximately the same results as those of the blood collected during the latent tetany except for the usual decrease in inorganic phosphorus that follows epinephrine: carbon dioxide content, 67 volumes per cent, 27.8 milliequivalents per liter of plasma; chloride (plasma), 101.6 milliequivalents per liter of plasma; sodium (plasma), 140.1 milliequivalents per liter of plasma; phosphorus, 1.6 mg. per hundred cubic centimeters.

The active tetany lasted about fifteen minutes and then disappeared. During the next attack some days later, she was found to have a positive Trousseau sign. She was given on this occasion 64 mg. of codeine instead of epinephrine. The asthmatic attack subsided without the appearance of active tetany. One further mild attack occurred two weeks after the second sinus operation. No blood analyses were made at that time. We wished to ascertain whether a demonstrable alkalosis developed during the attack and after the administration of epinephrine but no further attacks have occurred.

COMMENT

In view of the history and observations it seemed reasonably certain that the underlying condition was a chronic infection of the upper respiratory tract with bronchial asthma. The appearance of the very unusual complication, tetany, however, arrested our attention and merits some discussion. Tetany in general may be divided into two types:

(*a*) Forms that are associated with a lowering of the blood calcium, a relationship first demonstrated by MacCallum.[1] This form of tetany is brought about only by a decrease in the fraction of the blood calcium that is physiologically active and not by a lowering of the fraction bound to protein. The first group of cases of tetany include:

1. Hypoparathyroidism, idiopathic or postoperative.
2. Infantile tetany associated with rickets.
3. Tetany occurring with osteomalacia.
4. Tetany of pregnancy.

Infantile tetany, tetany associated with osteomalacia, and tetany of pregnancy may result from deficient vitamin D in the diet, or deficient intake of calcium or excessive loss of this ion.

5. Tetany in the uremic stage of chronic nephritis.

From the Chemical Division of the Medical Clinic, Johns Hopkins University and Hospital.

1. MacCallum, W. G., and Voegtlin, Carl: Bull. Johns Hopkins Hosp. **19**: 91, 1908.

In the patient with chronic nephritis the total calcium is often low. This is usually due to a decrease in the calcium-protein fraction caused by a decrease in plasma protein. However, with the high phosphate in the blood the active fraction of calcium may also be decreased sufficiently to cause tetany. The presence of a slight acidosis in nephritis undoubtedly lessens the incidence of tetany. Occasionally the injection of bicarbonate in nephritis produces an alkalosis and tetany results.

(*b*) In a second large group, those forms of tetany in which the blood calcium is normal but in which other blood electrolytes are disturbed. In all these there is either a decrease of carbon dioxide tension or an increase of bicarbonate and an alkalosis is present. These cases include:

1. Hyperventilation (decrease of carbon dioxide tension).
2. Gastric tetany (loss of hydrochloric acid, compensation of chloride loss by increase of bicarbonate).
3. Injection of sodium bicarbonate.
4. Injection of alkaline phosphate. (There may in this case be a lowering of blood calcium in addition.)

Although some authors have considered that alkalosis is essential to parathyroid tetany, it now seems probable that this is not the case. Careful observations by accurate methods have demonstrated that tetany may occur in the parathyroidectomized animal without alkalosis and solely as a result of the low calcium.

On the other hand, the occurrence of tetany in the second group (in which total blood calcium is normal) has been explained by the influence of the alkalosis on the activity of that fraction of the serum calcium which is physiologically active.

Rona and Takahashi's formula [2] relating the calcium ions to p_H and bicarbonate is well known:

$$Ca^{++} = \frac{Ks.p.}{K'} \times \frac{(H^+)}{(HCO_3^-)}$$

The objections to the application of this formula, with a clear discussion of the subject, has been supplied by Peters and van Slyke.[3] From the work of Grant and Goldman [4] and that of Gunther and Greenberg,[5] confirmed by McLean and Hastings,[6] one would conclude that alkalosis alone without alteration of the physiologically active fraction of the blood calcium may produce tetany.

The normal blood calcium places the present patient definitely in the second group of tetany, that associated with alkalosis. Our problem is therefore to offer an explanation for the alkalosis and thus for the development of latent and finally active tetany. Vomiting and alkaline injections can be excluded in this case as a cause of latent tetany. Hyperventilation seems to be left as the logical explanation. The sodium of the plasma was normal. The chloride of the plasma was at the lower limit of normal, and from the carbon dioxide content it is probable that the bicarbonate was at the upper limit of normal. In these respects the blood chemical observations were similar to those found after vomiting and before gastric tetany appears. They are also representative of the blood chemistry pattern encountered in many cases of emphysema.

The lungs of the patient under discussion were not definitely emphysematous. However, with low plasma chloride and high bicarbonate, slight lowering of the carbon dioxide tension by mild hyperventilation would produce a slight alkalosis. Early in the attack before the bronchial spasm could prevent it she did seem to succeed in hyperventilating slightly. Certainly latent tetany appeared. With regard to the active tetany the mechanism seemed much clearer. The failure of active tetany to appear when she was given codeine instead of epinephrine, and the prompt appearance of active tetany following the relief of the bronchial spasm by epinephrine both suggested very strongly that hyperventilation was made possible by the epinephrine and that this was responsible for the active tetany.

The presence of latent tetany, demonstrated in this case in association with asthma, serves as a warning. Laryngeal spasm, the most dangerous of the symptoms of tetany, might easily be overlooked during an asthmatic attack. Latent tetany should be tested for during asthmatic attacks, particularly as epinephrine, so useful in relieving the asthma, was found in the present case to precipitate active tetany. If laryngeal spasm did occur it would tend to appear with the active tetany; i. e., after the relief of the bronchial spasm had permitted hyperventilation. Laryngeal spasm might easily be regarded merely as a residual of the asthmatic attack, and death of the patient occur as a result of this misconception.

2. Rona, P., and Takahashi, D.: Biochem. Ztschr. **49**: 370, 1913.
3. Peters, J. P., and van Slyke, D. D.: Quantitative Clinical Chemistry: Interpretations, chapter on calcium.
4. Grant, S. B., and Goldman, A.: Am. J. Physiol. **52**: 209 (June) 1920.
5. Gunther, Lewis, and Greenberg, D. M.: The Diffusible Calcium of the Blood Stream in Tetany, Arch. Int. Med. **47**: 660 (April) 1931.
6. McLean, F. C., and Hastings, A. B.: J. Biol. Chem. **108**: 306 (Jan.) 1935; Am. J. M. Sc. **189**: 601 (May) 1935.

Clinical Notes, Suggestions and New Instruments

A NEW METHOD AND END RESULTS IN THE TREATMENT OF CARCINOMA OF THE STOMACH AND RECTUM BY SURGICAL DIATHERMY

(ELECTRICAL COAGULATION)

ALFRED A. STRAUSS, M.D., Chicago

In previous publications my associates and I have reported the effect of surgical diathermy in coagulation of the rectum. Forty-two cases have been treated by this method in eight and one-half years. Two deaths resulted immediately from the surgical diathermy. Since that time we have added thirty-one cases with only one death.

These results have led us to attempt similar experiments in other parts of the intestinal tract, including particularly inoperable carcinoma of the stomach. The cases were inoperable and of the type in which x-rays and radium have no effect.

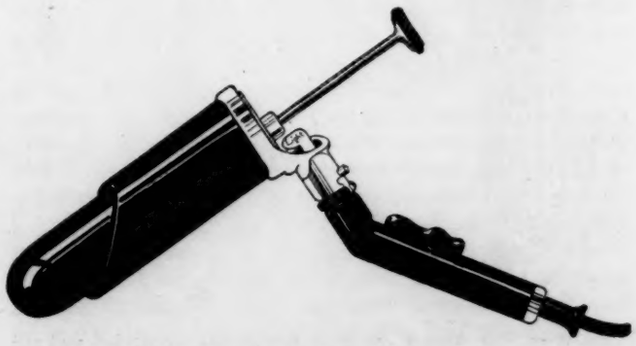

Fig. 1.—Specially constructed gastroscope for surgical diathermy of the stomach and rectum.

We have treated two cases of carcinoma at the lower end of the esophagus, two cases of carcinoma of the cardiac end of the stomach, and two of the lesser curvature.

A midline incision was made through the abdominal wall on the ensiform cartilage to within one inch of the umbilicus, and the stomach was exposed. A Witzel jejunostomy was made

for the purpose of feeding the patient. The anterior wall of the stomach was sutured to the skin (not the abdominal wall) with interrupted silk sutures. The anterior wall of the stomach was opened for about 3½ inches midway between the lesser and greater curvatures. The specially constructed gastroscope (fig. 1) is then inserted and the tumor coagulated.

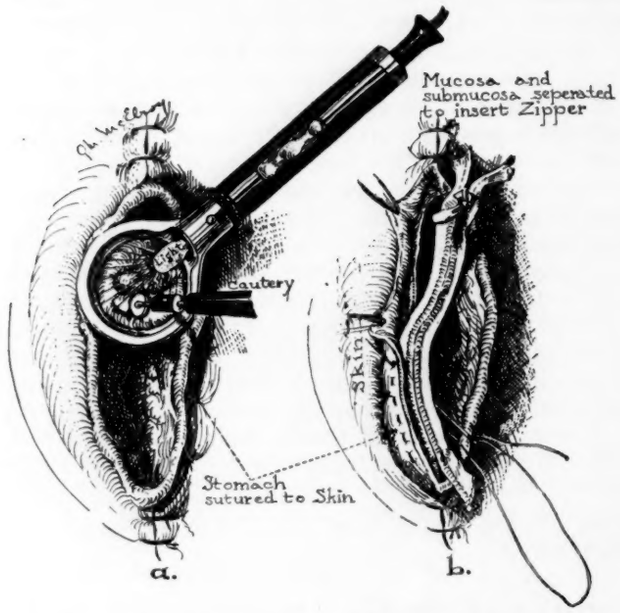

Fig. 2.—*a*, gastroscope in the cavity of the stomach for diathermy; *b*, suturing of ribbon end of slide fastener in between the mucosa and muscularis of stomach.

On account of the spilling of gastric juices from the open stomach attached to the skin, which was annoying to the patient, and because of loss of chlorides and gastric juices and on account of the inability of the patient to eat except through the artificially fed jejunostomy, we attempted to close the stomach by an ordinary slide fastener.

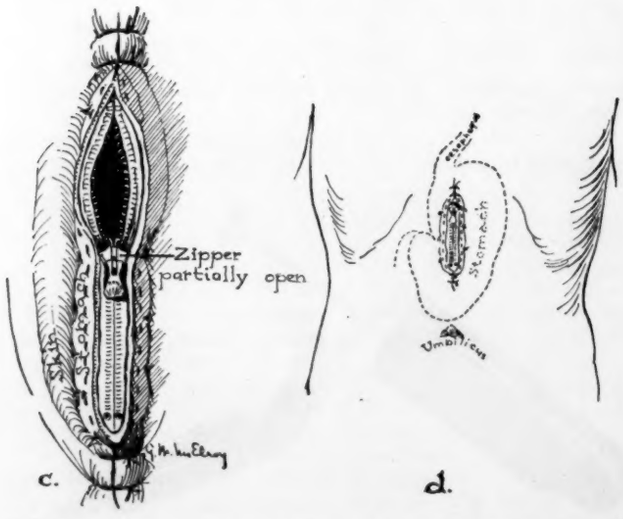

Fig. 3.—*c*, slide fastener completely sutured into the stomach wall and partially opened; *d*, slide fastener closed and showing its relationship to the stomach as a whole.

The muscularis and the mucosa were separated and the ribbon portion of the slide fastener sutured into the wall of the stomach (figs. 2 and 3). This permitted us to open and close the stomach at will, prevented the spilling of gastric juices, and permitted the patient to eat. After the diathermies are completed, the stomach is closed permanently in the usual manner.

The value of the method is not yet, of course, determined.

104 South Michigan Avenue.

FATAL INHALATION OF A DRY CLEANING FLUID

THOMAS A. GONZALES, M.D., NEW YORK

Two editorials[1] in THE JOURNAL prompted the report of the following case:

G. P., a housemaid, aged 40, contrary to directions on the gallon container of "Quick as a Wink" cleaning fluid, poured almost the entire contents in a basin and dipped the garments in the liquid. She immediately became dizzy and faint, staggered out of the small room in which the operations were performed and collapsed. A physician after reviving her expressed the opinion that she had suffered a "heart attack."

A few days thereafter, at the behest of her mistress, she proceeded to clean dresses in a similar manner and was found dead beside the basin containing the fluid.

The necropsy was negative except for a moderate grade of chronic diffuse nephritis, pial edema and injection of the laryngeal and bronchial mucosa.

A chemical examination of the organs by Dr. A. O. Gettler revealed the presence of carbon tetrachloride and dichloropropane. The analysis showed 18 mg. in 500 Gm. of brain, 26.5 mg. in 500 Gm. of lung and 14.5 Gm. in 500 Gm. of liver, of clorinated hydrocarbons of low boiling point.

The amounts were too small to isolate the substances in pure form. These results were determined colorimetrically.

Analysis of the colorless fluid remaining in the container indicated approximately 60 per cent carbon tetrachloride and 40 per cent dichloropropane.

Municipal Building.

Special Article

THE LYMPHOMATOID DISEASES

(THE SO-CALLED LYMPHOBLASTOMAS)

E. B. KRUMBHAAR, M.D., PH.D.
PHILADELPHIA

The recognition of a number of obscurely caused disorders of the lymphatic and hematopoietic systems, mostly associated with blood changes and tissue enlargements, has now been making progress for over a century—ever since Hodgkin's original description in 1832. Nevertheless, though morphologically these conditions have been closely studied, the advances in our knowledge of their nature have not yet reached the stage that permits simplification of classification. Each new observation, then, adds to the burden of those who wish to keep abreast of the tide and are unwilling to accept an easy, premature and unwarranted classification. Furthermore, the problem is made especially difficult for the diagnostician because, though the typical forms are distinct, in no group of diseases are there so many variations of individual cases with overlapping into another category and perhaps even transition from one disease to another.

With the inauguration of modern hematology by Virchow and Ehrlich, sound criteria were accumulated for the segregation of typical cases of the various leukemias; the picture of lymphosarcoma was definitely outlined by Kundrat in 1893, while for Hodgkin's disease the establishment of a special pathologic histology by Sternberg and Reed about the turn of the century gave an adequate diagnostic basis for most cases of this disease, when microscopic tissue examination was

From the Office of the Chief Medical Examiner.

1. Volatile Poisons in the American Home, editorial, J. A. M. A. **101:** 1238 (Oct. 14) 1933. The Hazards of Dry Cleaning, editorial, ibid. **101:** 1970 (Dec. 16) 1933.

From the Department of Pathology, University of Pennsylvania School of Medicine.

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1935.

possible. A number of other more or less obscure conditions, such as pseudoleukemia, leukosarcoma, granuloma fungoides, Mikulicz's syndrome, the chloromas, and more recently the reticuloses and giant lymph follicle hyperplasia, present either such obvious relationships to the group or such difficulties of differential diagnosis that they may well be grouped together under one heading.

The term of my bracketed title, "lymphoblastoma," was first used by Mallory [1] in his textbook in 1914 to indicate a neoplasm derived from the lymphoblast. It has been gradually extended by different authors, however, to include so many conditions that to avoid utter confusion each has had to begin by carefully indicating just what he means to include. This unfortunate situation is not a whit better now than it was in 1926, when Minot and Isaacs,[2] in one of the best clinical papers on the subject, included thirteen terms in this category (from lymphatic leukemia and lymphosarcoma to Hodgkin's disease), with Banti's disease, chloroma and Mikulicz's disease as possible additions. Even this, however, did not include the more recently developed reticuloses, mycosis (granuloma) fungoides and other skin diseases that have obvious connections with the group.

It should not be necessary to ask indulgence for dwelling further on nomenclature, because not only does a poor or improper terminology start the newcomer with confused notions that haunt him perhaps indefinitely, but also, in the case of lymphoblastoma the inclusion under a neoplastic concept of diseases of unknown origin, which many regard as infectious, such as Hodgkin's and Banti's disease, both is unscientific and tends to smother curiosity and future study. That bold warrior James Ewing,[3] when this matter was discussed in 1927, said: "Although we may not be able to find clear differences in all cases, how are we going to make progress by throwing them all into one category? I would rather see the most minute differences emphasized and a classification based upon them until the time when the etiologic factors unify or subdivide the entire group." In this country particularly, the authority of Mallory and Warthin [4] and their numerous pupils has led to a widespread misuse of this term. I [5] have discussed elsewhere the pros and cons of this problem and given my preference in such cases for eponymic names that are noncommittal as to etiology, at least until a cause for the disease based on adequate evidence is forthcoming. For this rather heterogeneous group of so-called lymphoblastomas, however, which have so many clinical and pathologic similarities and differences, I must admit that I can think of no completely adequate retort to Ole Bill's axiom, "If you know a better 'ole, go to it!" The term "malignant lymphoma," a favorite with the Boston investigators who have studied these diseases so extensively, is only one step less objectionable than the other, in that it has a slightly less concrete significance. Any designation that approaches accuracy becomes an unwieldy description, not a term; so for want of a better, I propose to group them under the noncommittal and relatively brief title of the "lymphomatoid diseases." It should be unnecessary to add that this is intended for nosologic convenience only, and in no way to indicate genetic reactions between the diseases treated.

As a basis for this study we have analyzed the 150 cases that fall into this group in the autopsy records of the University and Philadelphia General hospitals (table 1). I would like to consider some of the interesting points that this study and the experiences of others have brought forth.

THE LEUKEMIAS

As we have already had more than enough of terminology, I shall omit my reasons for preferring the older established terms to the newer terms "myelosis" and "lymphadenosis." The myeloid leukemias, acute and chronic, and the rare monocytic, plasma cell and eosinophilic forms we may pass over at this point, since their problems are largely included in those of the lymphatic leukemias and since they do not offer the same diagnostic difficulties (on account of the different type of cell involved).

TABLE 1.—*The Lymphomatoid Diseases with the Age and Sex Distribution of 150 Cases*

	Cases		Ages, Years		Sex: Male	Sex: Female
Lymphatic leukemia:		22		35.7	21	1
Acute lymphatic leukemia	7		23.8		7	
Chronic lymphatic leukemia	12		39.4		11	1
Aleukemic lymphatic leukemia	2		29.5		2	
Unknown	1		51.0		1	
Lymphosarcoma		41		43.0	30	11
Reticulum cell sarcoma		2		39.0	2	
Aleukemic reticulosis		1		13.0		1
Leukosarcoma		3		50.0	3	
Hodgkin's disease		35		43.3	25	10
Granuloma (mycosis) fungoides		0				
Mikulicz's disease		0				
Diagnostically connected:						
Myelogenous leukemia:		28		44.7	19	9
Acute myelogenous leukemia	10		44.1		6	4
Chronic myelogenous leukemia	14		44.4		10	4
Aleukemic myelogenous leukemia	2		52.5		1	1
Unknown	2		49.0		2	
Monoblastic leukemia		0				
Monocytic leukemia		1		16.0		
Agranulocytosis		11		52.0	6	5
Cooley's erythroblastic anemia		2			1	?
Infectious hemolytic anemia		1		43.0		1
Hepatic thrombosis		1		7.0		1
Von Jaksch's disease		2			1	1

With the lymphatic leukemias, however, we run into the heart of the problem. Here we have to deal with acute and chronic and aleukemic forms, leukosarcoma with its blood picture of leukemia and tissue changes of lymphosarcoma, Mikulicz's disease and leukemia cutis (to be discussed later under a separate section). Leaving the cause of lymphatic leukemia to be discussed later, we may note in our series the great preponderance of males (twenty-one of twenty-two cases), a common observation (though not usually as striking as in our cases) for which no explanation is forthcoming. The age distribution also follows the accepted scheme, namely, peaks of the acute cases around 20 and 47 years (range from 2 to 54 years) and of the chronic cases at 40 years (range from 11 to 61 years). Curschmann,[6] in his review of eighty-one cases of leukemia, emphasizes the late onset in the chronic forms: Of fifty-one chronic cases, thirty-four (67 per cent) began between the ages of 50 and 70; in our series, 50 per cent. The tendency to the aleukemic variety was found to be most marked in his older patients. Other factors such as race, occupation and season of the

1. Mallory, F. B.: Principles of Pathologic Histology, Philadelphia, W. B. Saunders Company, 1914.
2. Minot, G. R., and Isaacs, Raphael: Lymphoblastoma (Malignant Lymphoma): Age and Sex Incidence, Duration of Disease, and Effect of Roentgen-Ray and Radium Irradiation and Surgery, J. A. M. A. **86**: 1185 (April 17), 1265 (April 24) 1926.
3. Ewing, James: Am. J. Path. **3**: 551 (Sept.) 1927.
4. Warthin, A. S.: The Genetic Neoplastic Relationships of Hodgkin's Disease, Ann. Surg. **93**: 153 (Jan.) 1931.
5. Krumbhaar, E. B.: Is Typical Hodgkin's Disease an Infection or a Neoplasm? Am. J. M. Sc. **188**: 597 (Nov.) 1934.
6. Curschmann, H.: Zur Morbidität der Leukämien, insbesondere auch im höheren Alter, Deutsche med. Wchnschr. **61**: 285 (Feb. 22) 1935.

year could not be shown to play a part in our series any more than in cases to be found in the literature. The onset of the acute forms was naturally more sudden than that of the chronic. In four, definite episodes were so strikingly connected with the onset of the leukemia that they cannot be dismissed as without significance (two "colds," one convalescence from pneumonia, one injury to the back).

In the myelogenous leukemias also, definite episodes seemed to bear a striking relation to the onset. In Dr. Bauer's case [7] at the Pennsylvania Hospital an unemployed adult had spent the night on a park bench in the rain—a chill, pain in the head, chest and stomach, and hemoptysis, hematemesis and hematuria ushered in a fulminating acute myelosis (leukocytes changing from 2,700 to 50,200) that was fatal in a few weeks. Just as striking is Rösler's [8] case of typical leukemia with priapism, developing thirty-three hours after a heavy blow on the root of the penis. Craver [9] has also recently detailed a number of striking incidents in relation to the onset of leukemia. In three of our twenty-eight cases of myelogenous leukemia, pregnancy seems to have been the determining factor, while in three others recent respiratory infections were associated.

Unfortunately, however, such observations could fit with either an infectious or a neoplastic theory of etiology; the possibility must also be borne in mind that, even if they were the precipitating causes in these cases, a leukemic basis may have been silently forming for an indefinite period beforehand.

TABLE 2.—*Spleen Weight in Lymphatic and Myelogenous Leukemia*

	Average Absolute Weight (in Grams)	Per Cent of Normal Weight
Acute lymphatic leukemia	693.5	835
Chronic lymphatic leukemia	1,297.5	874
Average for acute and chronic lymphatic leukemia	1,075.0	860
Acute myelogenous leukemia	482.2	514
Chronic myelogenous leukemia	1,879.2	1,251
Average for acute and chronic myelogenous leukemia	1,333.0	962

Blood Picture.—As might be expected, anemia developed more rapidly in the acute than in the chronic cases, an argument for its toxic or hemolytic nature rather than for being due solely to a crowding out of erythroblastic tissue in the marrow. A terminal aleukemic picture was found in only two (one acute and one chronic). It should be noted that, while this aleukemia is usually a transient or terminal state of the leukocyte count, it may dominate the picture throughout.

The cell type in blood and hematopoietic tissues conformed to the view that the large, immature cells predominate in the acute forms and the small mature varieties in the chronic. In leukemia, as elsewhere, the terms "acute" and "chronic" are hard to delimit, the one etymologically referring to sharpness and the other to time, and both tinged here with the factor of the type of predominant cell in the blood. The best rule of thumb seems to be governed mainly by the predominant cell. A plurality of immature cells indicates an acute variety, and it is rare indeed that such cases last more than three to four months. Mature cells (usually in higher percentages than are the immature cells in the acute forms) indicate a chronic form (existing more than four months) and if found in a clinically acute case mean either that the condition was latent for a longer period or was picked up in a stage of acute exacerbation of the chronic disease.

Another detail of hematologic interest is that, for reasons quite unknown, an eventually typical leukemia may be ushered in (as in one of our cases) by a protracted monocytosis with only slightly increased total leukocyte count. Our series adds nothing further that is noteworthy to the accepted picture of the signs, symptoms and blood picture of the condition.

Duration.—Fulminating cases may last only a few days; at the other extreme, well authenticated cases have been known to continue, especially with judiciously applied radiation, for as long as from ten to fifteen years.[10] None of our series came near either of these extremes. While extensive remissions may occur, no definite recovery has ever been observed. Occasional recoveries of individual cases may safely be assigned to some other disease with a "leukemoid" blood picture.[11]

Atypical Forms of Leukemia.—Too much has been written on this topic to demand detailed consideration here, and generalizations are not yet possible. One may find, even after careful study, that the diagnosis, say, between aleukemic leukemia and agranulocytosis, cannot be made. Omitting such obsolete categories as leukanemia, cases may be found with the clinical and postmortem picture of leukemia but with normal total and differential blood counts; or, conversely, with a protracted leukemic blood picture but without appropriate tissue changes; or with the clinical picture of lymphosarcoma and normal blood count and the autopsy changes of leukemia. A case of Dr. J. B. Deaver's, in which the spleen had been justifiably removed for Banti's disease, after many months of improvement presented a progressive picture of myelogenous leukemia with the inevitably fatal outcome. Similar atypicalities might be detailed with profit but *ad nauseam.*

The Weight of the Leukemic Spleen.—The average weights of the spleens of the acute and chronic lymphatic and acute and chronic myelogenous spleens in our series have been compared both absolutely and in relation to the supposed normal for the age of each case (Vierordt's anatomische tabellen). Disregarding the inaccuracies in these "normal" figures, which apply about equally to all ages, surprisingly large figures are found for the lymphatic varieties; in fact, larger in the acute lymphatic than in the acute myelogenous type. While the spleen of chronic myelogenous leukemia still averaged the largest and presented the two largest spleens of the series (4,930 and 5,380 Gm.), the third largest was of the lymphatic type (4,400 Gm.).

LYMPHOSARCOMA AND LEUKOSARCOMA

Lymphosarcoma and Kundrat's lymphosarcomatosis present fewer difficulties from the clinical point of view. Some of their pathologic aspects of interest will be discussed later.

Sternberg's [12] concept of a condition between lymphatic leukemia and lymphosarcoma, with the blood picture of the former and the tissue changes of the latter, seems to be correct, in spite of Naegeli's view

7. Bauer: Unpublished data.
8. Rösler, O.: Traumatische Leukämie und Priapismus, München. med. Wchnschr. **82**: 217 (Feb. 7) 1935.
9. Craver, L. F., read before the meeting of the American Society for Cancer Research, 1935.
10. Leucutia, Traian: Irradiation in Lymphosarcoma, Hodgkin's Disease and Leukemia, Am. J. M. Sc. **188**: 612 (Nov.) 1934.
11. Krumbhaar, E. B.: Leukemoid Blood Pictures in Various Clinical Conditions, Am. J. M. Sc. **172**: 519 (Oct.) 1926.
12. Sternberg: Leukosarcomatosis, Beitr. z. path. Anat. **61**: 75, 1916.

that these rare cases are truly all leukemias. The crucial point, as brought out in our three cases of this type, is the true regional neoplastic growth in leukosarcoma (as in lymphosarcoma), as contrasted with the cellular infiltration, no matter how marked, of the leukemias.

PSEUDOLEUKEMIA

Pseudoleukemia is a term which fortunately has not had to be used in our analysis. Since first conceived by Cohnheim, this category has had so many concise conditions segregated from it—Hodgkin's disease, aleukemic leukemia, the reticuloses, erythroblastosis fetalis, and the like—that it seems now destined for oblivion. And this, I may add, in my opinion, is a proper way for medical science to progress. First, a noncommittal term for a vaguely comprehended condition, to be replaced or discarded as knowledge becomes more adequate.

RETICULOSES

The latest additions to the lymphomatoid diseases are the three types of changes in the reticulo-endothelial system, which may be regarded as analogous to the lymphatic leukemia, aleukemic leukemia and lymphosarcoma of the lymphocyte system; i. e., monocytic leukemia (leukemic reticulosis or reticulo-endotheliosis), aleukemic reticulosis, and reticular cell sarcoma (retrothelial sarcoma).

First described in 1913 by Reschad and Schilling,[13] monocytic leukemia is now well established as a rare condition, occurring either in the acute monoblastic or the more chronic monocytic form. Except for the predominance of monoblasts and monocytes in the blood stream and tissues, the disease presents no striking differences from the clinical and postmortem picture of lymphatic leukemia. In the only case we had in this series, L. S., a girl aged 16 years, the onset was sudden with facial paralysis and, shortly afterward, pain and swelling over one eye, and dizziness, a rapidly extending involvement of the skin, both breasts and the inguinal and submaxillary lymph nodes. (A possible onset a month before the paralysis was considered, because of a painless purple lump that appeared on the tongue.) During the nine weeks that elapsed before death, the total leukocyte count reached 257,000, with 90 per cent monocytes. At autopsy, the typical extensive involvement of bone marrow and most of the organs did not permit one to be precise as to where the process had started.

In aleukemic reticulosis, as in aleukemic leukemia, benign accumulations of tissue histiocytes (reticulo-endothelial cells) are found distributed to varying degrees through the organs, without any changes in the blood picture.

The reticulum cell sarcoma (which includes those of the older large round cell sarcoma group that are not large lymphocytomas or lymphoblastomas) is the analogue of the lymphosarcoma in the lymphatic group and obeys somewhat similar laws. Sometimes the cell cytoplasm is rounded; sometimes it can be seen tailing off into the adjacent reticulum. A practical and biologic difference from lymphosarcoma is its considerably greater resistance to radiation treatment. In still further analogy to the lymphocyte situation, a few cases have been reported with the blood picture of monocytic leukemia and the tissue changes of sarcoma—what might be called a monocytic leukosarcoma. It must be admitted, however, that all these developments are too recent and too rare to have settled down to a final level for evaluation.

One other condition should be mentioned: the giant follicular hyperplasia in spleen or lymph nodes or both of Brill, Baehr and Rosenthal.[14] Remaining localized for some years as a benign lymphoma or lymphoblastoma, several of these cases have now been observed to change into malignant tumors, usually lymphosarcoma, but sometimes reticular cell sarcoma, both of these cells being present of course in the original growth. This condition is also noteworthy as being especially susceptible to irradiation, so that the suggestion has been made that splenomegalies of unknown nature should be given a course of irradiation, as a diagnostic as well as a therapeutic measure.

HODGKIN'S DISEASE

As long as the general group under consideration bears such a noncommittal title as "lymphomatoid diseases," the inclusion of Hodgkin's disease can raise no objection. Its many similarities and analogies to other members of the group have formed the basis for many articles in the medical literature of this century. The present study has brought out but little of further interest. The age and sex distribution and duration of the disease reflect the current opinions. The relatively infrequent association with active tuberculosis (four of thirty-five cases) is the more valuable as evidence from being based entirely on postmortem studies. The absence of any cases of terminal Hodgkin's sarcoma is also noteworthy, though it must be admitted that the same material in the hands of other pathologists might have produced different results.

Etiology.—The fundamental question of the cause of these lymphomatoid diseases unfortunately remains in the same obscurity that has enveloped it for a generation or more. Those who frankly regard them all as malignant neoplasms are the most contented, as further classification then becomes of minor importance and no specific curative treatment other than that of malignant tumors in general need be sought for. The proponents of the infectious nature of some of them, on the other hand, must search for possible separate causative

TABLE 3.—*A Classification of Primary Myelogenous, Lymphocytic and Reticular Disorders*

	Myelogenous	Lymphocytic	Reticular
A Tissue hyperplasia and leukemic blood	Acute myelogenous leukemia (leukemic myelosis); chronic myelogenous leukemia	Acute lymphocytic leukemia (leukemic lymphadenosis); chronic lymphocytic leukemia	Monoblastic leukemia (leukemic reticulosis); monocytic leukemia
B Aleukemic variety of A (temporary or permanent)	Aleukemic acute myelogenous leukemia (aleukemic myelosis); aleukemic chronic myelogenous leukemia	Aleukemic acute lymphatic leukemia (aleukemic lymphadenosis); aleukemic chronic lymphatic leukemia	Aleukemic monocytic leukemia (aleukemic reticulosis)
C Malignant tissue changes only	Myelogenous myeloma; myelochloroma (aleukemic)	Lymphosarcoma; lymphoid myeloma; plasma cell myeloma; lymphochloroma	Reticulum cell sarcoma (retothelial sarcoma)
D Combination of A and C	[Myelogenous leukosarcoma]*; myelochloroma (leukemic)	Lymphatic leukosarcoma; lymphochloroma (leukemic)	Monocytic leukosarcoma (retothelial sarcoma with leukemic reticulosis)

* Not yet described.

13. Reschad, H., and Schilling-Torgau, V.: München. med. Wchnschr. 60: 1198, 1913.

14. Brill, N. E.; Baehr, George, and Rosenthal, Nathan: Generalized Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen: A Hitherto Undescribed Type, J. A. M. A. 84: 668 (Feb. 28) 1925.

agents for each—agents that will satisfy the more exacting modern requirements than those of Koch's postulates. Most of the micro-organisms that from time to time have been incriminated for a number of these diseases can safely be passed by, with the exception of the tubercle bacillus, which in its avian form, in spite of accumulated negative evidence, still staggers along as a possible cause of Hodgkin's disease. Desjardins [15] believes that any chronic infection may act as the immediate cause of most of these diseases and that this infectious cause can be elicited by careful history taking. But careful history taking will elicit episodes of sore throats, sinusitis and the like in so many persons who do not have these diseases that *post hoc* seems a much more suitable term to use here than *propter hoc*. Certainly more definite support than the probable hereditary predisposition that Desjardins adds is required to make this concept more than an interesting suggestion. The field of virus diseases, now being so assiduously cultivated, may afford an unexpected crop; but it must be admitted that its latest contribution, Gordon's production in animals of encephalitis from Hodgkin's lymph nodes, seems to be only of diagnostic use. The production of a similar encephalitis by normal bone marrow and other tissues lends weight to the theory that the injected material has merely activated in the rabbit a dormant virus disease. The frequent relationship to the onset of leukemia of trauma, pregnancy and so on, like the frequent association of tuberculosis with Hodgkin's disease, while too striking to be summarily dismissed as coincidence, can be used almost as well to support either the neoplastic or the infection theory. In lymphosarcoma, reticular cell sarcoma and the chloromas, of course, a neoplastic origin is obvious from a study of the tissue changes.

In the field of the leukemias, about the most important of the whole group, the demonstration of the neoplastic nature of the transmissible forms in mice and fowls [16] offers a strong analogy for a similar neoplastic nature in the human disease—I say analogy rather than demonstration, as it is well known that similar disease pictures can be produced in different species by different disease processes. Though some authorities would assign an infectious nature to the acute leukemias (in view of the febrile and ulcerative onsets) and a neoplastic to the chronic forms, more imposing arguments point to a similar cause for the two. Not only do the animal experiments produce all gradations between acute and chronic forms with the same virus, but in the human disease, in my opinion at least, transition and intermediate forms can also be found, and furthermore the fundamental changes—the lesions in the hematopoietic system—are essentially similar in both acute and chronic types. Further evidence toward the neoplastic nature of the leukemias is the occurrence of so-called leukosarcoma, the intermediate stage between leukemia and the admittedly neoplastic lymphosarcoma. However, Naegeli, one of the world's leading hematologists, finds so many points against both neoplasm and infection that he favors, quite theoretically, an irreparable dysharmony of the endocrine system! For Hodgkin's disease, on the other hand, if this diagnosis is limited as it should be to cases conforming to the classic histologic picture, as has been indicated elsewhere,[5] the evidence in favor of an infectious origin is more impressive. In neither leukemia nor Hodgkin's disease, however, can the etiology be regarded as determined.

In conditions such as granuloma fungoides, von Jaksch's disease and Banti's disease, the point has scarcely been reached at which etiology can be intelligently considered. These are hardly more than dump heap clinical terms, which may disappear entirely as other definite concepts are removed from the heap.

PATHOLOGIC ANATOMY

Pathologic histology, which undoubtedly remains the surest basis both for classification of the lymphomatoid diseases and for the diagnosis of individual cases, should be utilized whenever possible. Even here, however, neither the method nor the pathologist is infallible. In fact, this field presents a superlative example of the need for the pathologist to base his opinion on all the information that he can acquire from many different angles. In the lymphocytic group, for instance, it would frequently be impossible to tell f om a histologic preparation of a lymph node alone whether one was dealing with leukemia, lymphosarcoma or leukosarcoma. The architecture is destroyed in all by small lymphocytes, which invade the capsule and show an increased number of mitoses. It is only when one sees that there is a true regional neoplastic growth and spread (as compared with the metastatic cell infiltrations of leukemia) that lymphosarcoma (and leukosarcoma) can be diagnosed. As compared to the picture in Hodgkin's disease, in leukemia and lymphosarcoma the growth of lymphoid cells, whether local or general, is a uniform one.

Occasionally material from a lymph node excised during life will legitimately be diagnosed lymphosarcoma, say, or Hodgkin's disease, only to be proved at autopsy some months or years later that the opposite picture predominated. Such rare happenings do not necessarily mean that one disease has changed into the other or that a new pathologist is needed; rather that the histologic method, albeit the best now available, has its limitations and that sometimes peripheral lymph nodes are not true indicators of the essential lesion. In some cases, it must be admitted, it is hard not to accept the theory that one disease has been transposed into the other.

Most of the lymphomatoid group of diseases are peculiarly susceptible to radiation therapy. This means that much of the tissue that reaches the pathologist will exhibit radiation changes—another stumbling block in the way of accurate diagnosis. One of our cases of lymphosarcoma, starting in the cervical nodes, but eventually widespread through the body, proved unusually resistant to x-rays. In the autopsy preparations, phagocytosis of tumor cells was the outstanding feature. Though deductions on the basis of a single case are impossible, one can speculate here on possible resistance relationships and at least, as pathologists, admire the extraordinary amount of phagocytosis shown!

The tissue changes in the lymphatic group are much more homogeneous than in the myelogenous leukemias, where a variety of cells seem to be stimulated to increased production. In addition to the granulocytic series in all stages of maturity, in the bone marrow, the erythrocyte series may be greatly increased (beyond the amount that the degree of anemia would indicate).

15. Desjardins, A. U.: The Etiology of Lymphoblastoma, J. A. M. A. **103**: 1033 (Oct. 6) 1934.

16. Ellermann: Experimental Leukämie bei Hühner, Verh. d. deutsch. path. Gesellsch. **12**: 224, 1908. Furth, J., and Strumia, M.: Studies on Transmissible Lymphoid Leucemia of Mice, J. Exper. Med. **53**: 715 (May) 1931. Furth, J., ibid. **59**: 501 (April) 1934. Richter, M. N., and MacDowell, E. C.: Studies on Mouse Leukemia, J. Exper. Med. **57**: 1 (Jan.) 1933.

Megakaryocytes are also increased, and this may be reflected peripherally by considerable increase in the blood platelets. The nature of such a "panmyelosis" is not clear; perhaps it is a nonspecific stimulation of other bone marrow elements than the myelogenous or perhaps a more fundamental manifestation of the nature of the disease.

The limitations of the purely morphologic approach to the study of the essential cells of the lymphatoid diseases have already been somewhat broken down by more biologic methods of study. The reactions to vital dyes, the peroxidase stains, the test for proteolytic ferments (present in the granulocytic, absent in the lymphocytic series), the angle of the mitotic spindle,[17] Isaacs'[18] and Groat's[19] observation of the apparently constant haploid state of the chromosomes in mitosis, all these promise to make further contributions to our knowledge of the essential nature of the cells. Dr. H. M. Dixon, in our department, pursuing another line toward the same goal, is making quantitative warm stage studies of the motility and direction of movement of these cells. He has already found, for instance, that whereas normal human lymphocytes retain progressive motility for more than a week under these conditions, lymphocytes from a case of acute lymphatic leukemia, in preparations in which the sensitive neutrophils moved normally, moved for only an hour, after which they remained round and stationary and apparently dead. In another chronic case the lymphocyte motility was even less. Monocytes from the case of monocytic leukemia, previously referred to, showed no progressive motility and changed shape much less than the monocytes from a case of infectious mononucleosis. Such observations, which have not yet developed far enough to be regarded as more than suggestive, are in accord with Furth's views that in his transmissible leukemias the leukemic cells are pathologic from the start, are the only contributors to the host's high count, and are to be sharply differentiated from the same type of cells of the host into which they have been transmitted.[20]

THE SKIN

The skin manifestations of several of the lymphomatoid diseases have been sufficiently complex to produce the same problems and confusion among the dermatologists as in the general field. Here also has the term "lymphoblastoma" been stretched and twisted almost out of recognition[21] of its original meaning in general pathology. In my comparative ignorance of this phase of the subject, yet realizing its importance in the whole picture, I have sought the help of my colleague Dr. Weidman and hope that I am not misrepresenting him here. Not only may we find in the skin Hodgkin's disease, universal or circumscribed leukemia of the skin of both lymphatic and myelogenous varieties, lymphosarcomatosis and leukemic and aleukemic reticulosis, all of these as accompanying and sometimes as apparently primary manifestations; but also such conditions as granuloma (mycosis) fungoides must be reckoned with. Originally, and still for that matter used as a descriptive term, without known etiology (except that it is not a mycosis!), the concept of granuloma fungoides (like splenic anemia) has had more and more cases taken from it as more and more knowledge has accumulated about their pathologic histology. How many more are still to come is a question that will long remain unanswered. Without biopsy, the clinician may still be forced back to the primitive state of calling any of these conditions granuloma fungoides. Cases reported, then, as granuloma fungoides terminating as leukemia are more simply and correctly regarded as true leukemia cutis with the early appearance of mycosis fungoides. To make matters still worse for our skin colleagues, apparent transitions are found: in a case of leukemia skin nodules with the histologic picture of Hodgkin's disease, or in the same individual nodules at one time presenting the picture of Hodgkin's disease and at another of leukemia or lymphosarcoma. Also, all these conditions may be preceded for months or even years by a quite unspecific erythrodermia and general adenopathy!

Somewhat similar to the situation in the skin is the occurrence of Mikulicz's syndrome, an extremely rare bilateral infiltration of lacrimal and salivary glands by lymphocytes or reticulo-endothelial cells resembling those of Hodgkin's disease. When found independently, i. e., not an accompaniment of leukemia, lymphosarcoma or Hodgkin's disease, it is dignified with the name Mikulicz's disease. Its cause is as obscure as that of the parent conditions, and the reasons for the election of lacrimal and salivary glands are also not apparent.

SUMMARY

1. Although the group of diseases under consideration includes several of different or unknown etiology, and a pathologic histology that is recognizably different in most, the great similarity or overlapping of many of the clinical pictures makes it convenient and advisable to include them in a group designation.

For this heterogeneous group, a noncommittal term "lymphomatoid diseases" is suggested instead of the scientifically inaccurate and progress-inhibiting designation of "lymphoblastoma," with its unjustifiable indication of neoplasm. It is further suggested that the latter term be reserved for the use for which it was coined, "a tumor derived from the lymphoblast," and not distorted out of sense to supply a clinical need.

2. In spite of, or rather in view of, the overlapping and often baffling clinical pictures met, the classification and the individual diagnoses as far as possible should be on a pathologic basis. It is more desirable to leave the diagnosis of cases in which this is impossible as tentative or unmade than to make unwarranted groupings under a single head for the sake of giving a label to a greater number of individual cases.

3. An analysis of 150 cases of these lymphomatoid and related diseases in the autopsy records of the University and Philadelphia General hospitals has brought out various items of etiologic and pathologic interest. Useful light on the essential nature of the diseases, however, has not been forthcoming.

4. Phagocytosis of tumor cells may occasionally be so marked as to require consideration as a factor in tumor resistance.

5. The lymphomatoid diseases are practically all alike in having a fatal prognosis, though the duration may extend from a few days to many years. With few exceptions they are peculiarly susceptible to and improved by radiation treatment. The relative resistance of the reticuloses to radiation may prove useful in segregating this group.

17. Warren, Shields: The Angle of the Mitotic Spindles in Malignant Cells, Am. J. Path. (Suppl.) **9**: 781, 1933.
18. Isaacs, Raphael: Development of the Myeloblast in Chronic Myelogenous Leukemia, Arch. Path. **9**: 1298 (June) 1930.
19. Groat, W. A.: Leukemias Showing Haploid Leukoblasts, Am. J. M. Sc. **185**: 624 (May) 1933.
20. Lewis, Warren: Normal and Malignant Cells, Science **81**: 545 (June 7) 1935.
21. Frazer, J. F.: Mycosis Fungoides, Arch. Dermat. & Syph. **12**: 814 (Dec.) 1925. Keim, H. L.: The Lymphoblastomas, ibid. **19**: 533 (April) 1929. Loveman, A. B.: Cutaneous Manifestations of the Lymphoblastomas, J. A. M. A. **104**: 1583 (May 4) 1935.

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CYCLOPROPANE FOR ANESTHESIA (OHIO CHEMICAL AND MANUFACTURING CO.)

Two papers on Cyclopropane for Anesthesia were offered to be read at the Atlantic City session of the A. M. A. In accordance with its usual custom, the Committee on Scientific Assembly asked that the Council consider the product before the papers were accepted for the program. The Ohio Chemical & Manufacturing Co. presented the product for the Council's consideration for the purpose of issuing a preliminary report.

John Snow, noting the type of anesthesias produced by chloroform and ether, studied the hydrocarbons in an attempt to find an agent which combined the best features of the two. He used amylene clinically but he was at a decided disadvantage because oxygen was not available to him. Many hydrocarbons have since been used, but only one is in general use: ethylene.

Lucas and Henderson, studying propylene, noted its isomer cyclopropane. Applying it to animals, they found it more powerful and less toxic than propylene.[1] Other workers have continued these studies and extended its use into clinical fields.

Cyclopropane was first noted as trimethylene by von Freund[2] in 1882. It is an inflammable gas,[3] less explosive than ethylene[4] or nitrous oxide-ether mixtures.[5] No explosions have been reported and the closed circuit technic of administration helps to avoid them.[5]

More than 5,000 clinical administrations have been reported in patients of all ages[6] and in practically all surgical conditions. It has been used in obstetrics by Griffith[5] and Bourne.[7] It is recommended for all types of individuals,[5] and in grave circulatory risks and extremely ill patients,[8] largely on the basis of the high oxygen concentration possible with this anesthetic.

The induction is rapid[9] and pleasant,[10] and there is no choking or burning. Apprehension is said to be reduced, breathing is quiet,[5] and dreams are not produced. It is a powerful agent of low toxicity[11] in adequate concentrations and is nonirritating.[3] The awakening is prompt and pleasant.[4]

The usual preoperative procedures have been used with this agent,[9] and also the barbiturates[6] and spinal agents.[5] Less premedication is said to be required and even preferred with this agent.[12]

Its administration involves the use of the Waters-Forreger closed circuit method[10] by which the patient rebreathes the cyclopropane and oxygen, the carbon dioxide being absorbed in a soda lime set-up.[5] Low concentrations are said to produce an anesthesia similar to ether.[4] High concentrations are irritating.[4] Details of administration, rate and concentration of the agent and the oxygen appear in the various reports. They are at wide variance, as is individual susceptibility to the agent.[13]

The signs of the phases of the anesthesia produced by this agent have been studied extensively.[14] Romberger,[15] feeling Guedel's[16] stages and planes unsatisfactory for this agent, devised a separate standard for determining the depth of anesthesia produced by cyclopropane. The first phase, "induction," ends with the disappearance of the lid reflex. The second, "moderate anesthesia," ends with disappearance of the eyeball movement. The degree of "deep anesthesia," the third phase, is judged by the respiratory excursions and ends with apnea. Observations of the breathing bag[15] are useful in the third phase because the usual augmentation when diaphragmatic breathing supervenes does not occur with this agent. Laryngospasm occurs only at high concentration.[17]

In animals,[1] metabolic changes were absent. In clinical cases the carbon dioxide combining power, nonprotein nitrogen, phosphorus and sugar showed little change before, during and four hours after anesthesia.[3] Animals did not show kidney, liver or heart damage.[1] The normal and chloroform-damaged livers were unimpaired in normal and in starving dogs.[11] In clinical cases the parasympathetics were said[5] to be unaffected except at higher concentrations than were usually employed.

In some instances there was difficulty in obtaining proper relaxation.[3] Other writers had little or no difficulty with this problem.[18] More than the usual amount of oozing has been noted by some, but others deny this complication.[5] Cyclopropane is said to be nonirritating to the respiratory system[3] and breathing is therefore quiet.[5] On the basis of an unaffected respiratory center, apnea is not considered dangerous[15] and carbon dioxide is contraindicated in its relief. It is ameliorated with increased oxygen and lessened cyclopropane.[15] Fewer postoperative respiratory complications were noted with 2,200 cyclopropane cases than with 2,200 cases in which other agents[19] were given.

In ordinary concentrations there is said to be very little effect on the blood pressure. The effect on the heart is slight, as indicated by the clinical notes and electrocardiographic studies. In the 4,400 cases referred to,[19] cyclopropane suffered by comparison on the basis of cardiac complications (in spite of the advantages of high oxygen concentration).

In obstetrics the agent seems to have been more useful than in other fields. The lack of effect on the respiratory center and the oxygen concentration seemed to be advantageous to both the mother and the child.[7] It is used in analgesia as well as in anesthesia.[20]

In Waters and Schmidt's reports[19] there was very little difference in the total number of complications resulting from cyclopropane and other agents (2,200 cases each).

The final test of any anesthetic agent is mortality occurring with its use. In the latest summary, Waters and Schmidt[19] report a mortality of 4.16 per cent as compared with 3.99 per cent with other agents (2,200 cases each). This figure is not at marked variance, but the attempt is ever to prevent just such small increases. It must be noted that these workers used higher concentrations than other writers, that they are working with a new, potent agent, and that, even in such a large series, percentages may be misleading. Nevertheless, further consideration must be deferred until more evidence is available of its superiority and usefulness.

The Clinical Congress of Anesthetists, which met Oct. 15, 1934, in Boston, placed this agent on a carefully controlled program of distribution and use for one year.

An article appearing in this issue reports its use with tribrom-ethanol in general surgical cases,[8] with apparent success. The use in combination with spinal anesthesia confuses the issue somewhat.

The Council has deferred further consideration of Cyclopropane for Anesthesia (Ohio Chemical and Manufacturing Company) until more evidence of its usefulness is available.

1. Lucas, G. H. W., and Henderson, V. E.: New Anesthetic Gas: Cyclopropane, Canad. M. A. J. **21**: 173 (Aug.) 1929. Henderson and Lucas: Cyclopropane: A New Anesthetic, Anesth. & Analg. **9**: 1 (Jan.-Feb.) 1930. Lucas and Henderson: Effect of Cyclopropane on Metabolism, Arch. internat. de pharmacodyn. et de thérap. **37** (II): 155, 1930.
2. von Freund, A.: Ueber Trimethylene, Monatsh. f. Chemie **3**: 625 (July 13) 1882.
3. Waters, R. M., and Schmidt, E. R.: Cyclopropane Anesthesia, J. A. M. A. **103**: 975 (Sept. 29) 1934.
4. Stiles, J. A.; Neff, W. B.; Rovenstein, E. A., and Waters, R. M.: Cyclopropane as an Anesthetic Agent, Anesth. & Analg. **13**: 56 (March-April) 1934.
5. Griffith, H. R.: Cyclopropane Anesthesia, Canad. M. A. J. **31**: 157 (Aug.) 1934.
6. Stiles, Neff, Rovenstein and Waters.[4] Griffith.[5]
7. Bourne, W.: Cyclopropane Anesthesia in Obstetrics, Lancet **2**: 20 (July 7) 1934.
8. Wood, P. M.: Clinical Use of Cyclopropane and Tribrom-Ethanol in Amylene Hydrate, this issue, p. 275.
9. Stiles, Neff, Rovenstein and Waters.[4] Waters and Schmidt.[3] Griffith.[5]
10. Waters and Schmidt.[3] Griffith.[5]
11. Raginsky, B. B., and Bourne, Wesley: Effects of Cyclopropane on the Normal and Impaired Liver, Canad. M. A. J. **31**: 500 (Nov.) 1934.
12. Stiles, Neff, Rovenstein and Waters.[4] Romberger.[15]
13. Seevers, M. H.; Meek, W. J.; Rovenstein, E. A., and Stiles, J. A.: A Study of Cyclopropane Anesthesia, J. Pharmacol. & Exper. Therap. **51**: 1 (May) 1934.
14. Seevers, Meek, Rovenstein and Stiles.[13] Stiles, Neff, Rovenstein and Waters.[4] Griffith.[5] Romberger.[15] Schmidt and Waters.[19]
15. Romberger, F. T.: Signs and Phases of Cyclopropane Anesthesia, J. Indust. State Med. **28**: 18 (Jan.) 1935.
16. Guedel, A. E.: Stages of Anesthesia and Reclassification of the Signs of Anesthesia, Anesth. & Analg. **6**: 157 (Aug.) 1927.
17. Stiles, Neff, Rovenstein and Waters.[4] Wood.[8]
18. Seevers, Meek, Rovenstein and Stiles.[13] Stiles, Neff, Rovenstein and Waters.[4] Griffith.[5]
19. Schmidt, E. R., and Waters, R. M.: Cyclopropane Anesthesia, Anesth. & Analg. **14**: 1 (Jan.-Feb.) 1935.
20. Griffith.[5] Bourne.[7]

CHONDROITIN

At the request of Dr. L. A. Crandall, the Wilson Laboratories submitted Chondroitin for the Council's consideration in connection with a paper by Crandall et al., on the use of the preparation in the treatment of idiopathic headache, which was later read at the Atlantic City session of the American Medical Association.

Chondroitin is stated to be a mixture of chondroitin and chondroitin sulfuric acid, containing not less than 70 per cent of the mixture calculated as chondroitin sulfuric acid. According to the manufacturer, chondroitin sulfuric acid is a definite chemical compound of 2 molecules of glucuronic acid, 2 molecules of galactosamine to which acetyl radicals are attached, and two sulfate groups.

The previous evidence for the usefulness of Chondroitin consists of the first report by Crandall and Roberts of clinical trials of its usefulness in the treatment of forty-two cases of idiopathic headache. Such effects had been previously noted in the treatment of peptic ulcer with Chondroitin. The results are given in the accompanying table.

The authors claim satisfactory results in 50 per cent of the cases. The markedly relieved group (50 per cent) includes those cases in which headache had been abolished or lessened in both frequency and severity. The patients were free from sinus infections, errors of refraction and other local conditions but were noted in some cases as having various systemic disturbances. The migraine group includes only those having a personal and family history of periodic headache, with two of the three following conditions: aura, nausea and vomiting, and hemicrania.

It was noted that there was a loosening of the stool that prevented treatment in one case; Chondroitin was also cathartic in two other cases, but catharsis had no effect on the results, or lack of results. No other untoward effects were mentioned.

The article read by Dr. Crandall reported extension of his work to embrace a period of three years and a total of 151 cases. The results were similar to those in the preliminary article. The lack of knowledge of the pharmacologic action of Chondroitin is noted.

Headaches Treated with Chondroitin

	No. of Cases	Markedly Relieved	Partially Relieved	Not Improved	Recurrence Without Treatment
Cases of migraine	25	14	7	4	13
Migrainoid headaches	10	3	4	3	5
Simple headaches	6	4	2	0	4

In brief, the Council calls attention to the following points in connection with Chondroitin:

1. The pharmacologic action is undetermined.
2. It is for use in conditions of unknown etiology (idiopathic headache).
3. In many cases the alleviation of the symptom continues only if medication is continued.
4. The results require confirmation from additional sources.
5. The number of cases reported is insufficient on which to determine usefulness of this type of preparation.

Chondroitin has been patented (U. S. patent 1,950,100) and the patent assigned to Northwestern University. The Wilson Laboratories has been granted a license to manufacture Chondroitin by the university.

The following statement in regard to the patent has been submitted by Dr. Crandall:

"A STATEMENT OF THE POLICY OF THE CHONDROITIN COMMITTEE, NORTHWESTERN UNIVERSITY

"When it became apparent that Chondroitin might possess therapeutic value in the treatment of idiopathic headache, those responsible for the development of this product, in deliberation with officials of Northwestern University, reached the conclusion that the interests of the public would best be served by control under a United States patent. It is believed that Chondroitin is the type of product which, if finally shown to be of therapeutic value, would be liable to an undesirable type of commercial exploitation unless so protected.

"U. S. Patent 1,950,100 was granted to Lathan A. Crandall Jr. on March 6, 1934. This patent was assigned by him to Northwestern University, for which assignment he received no remuneration. This patent is now being administered by the Chondroitin Committee of Northwestern University.

"This committee has administered the patent as follows:

"1. Because of the cooperation of the Wilson Laboratories in the development of Chondroitin, they have been granted a license which is exclusive for a certain period.

"2. Each lot of Chondroitin marketed must conform to the specifications of the Chondroitin Committee. The advertising of the product must be approved by the committee.

"3. Northwestern University receives a royalty of 5 per cent on all sales of Chondroitin. This income is used to defray the expenses of testing the product. Any sums in excess will be devoted to research.

"4. No individual has or will personally profit from the sale of patent rights or from royalties.

"Space prevents the presentation of details concerning contracts and licenses. Such details are held available to the profession.

"THE CHONDROITIN COMMITTEE OF NORTHWESTERN UNIVERSITY,
IRVING S. CUTTER
ANDREW C. IVY
LATHAN A. CRANDALL, JR."

The Council deferred consideration of Chondroitin (and the presented brand) until further studies of its pharmacologic action and confirmatory clinical reports from additional sources are available.

Committee on Foods

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Manufacturer.—The Borden Sales Company, Inc., New York.

Description.—Canned, evaporated milk; the same as Borden's Evaporated Milk (THE JOURNAL, Feb. 15, 1930, p. 485).

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 25, 1936

IN DEFENSE OF THE ADRENALS

Until recently, surgery on the glands of internal secretion had been restricted largely to the gonads and the thyroid. As knowledge of the functions of the endocrine organs has increased, many attempts have been made to suppress hyperfunction (real or alleged) of other glands. Different means to this end have been employed, chiefly roentgen irradiation or surgical manipulation; the latter usually consists in subtotal and less often in total extirpation of the offending organ. Attempts have been made also to sever the nerve supply.

As long as this interference with physiologic processes did not concern organs essential to life, the hazards were not excessive; but more recently surgeons and roentgenologists have been tampering with the adrenals! Elsewhere in this issue appears an article by Rogoff [1] concerning a case of fatal Addison's disease which supervened on attempted denervation of the adrenals. This serious surgical intervention had been performed in the hope of ameliorating the diabetes mellitus from which the patient suffered. This operation, and that of unilateral extirpation, bilateral subtotal resection or roentgen irradiation of the adrenals, has been done for the alleged relief of a variety of conditions, especially hypertension and other circulatory disorders, on the theory that these diseases are in some way related to hyperfunction of these organs. As pointed out in the symposium on Glandular Physiology and Therapy [2] recently published under the auspices of the Council on Pharmacy and Chemistry, evidence implicating the adrenals in these disease states is exceedingly meager and certainly cannot justify surgical operations on a gland which not only is necessary for life but is relatively inaccessible and lies in a nest of highly sensitive nerve structures.

The readiness with which surgeons undertake this procedure is surprising; it has even been advocated for such a condition as hirsutism in the female, which in itself is of no danger to life or health. Other conditions for which bilateral denervation or subtotal resection of the adrenals has been done include such unrelated conditions as gastric ulcer, epilepsy, hyperthyroidism, Raynaud's disease and spontaneous gangrene.[3] As Rogoff aptly points out, "The very fact that it is alleged to be of benefit in so great a variety of diseases ought to render the practice suspect."

The proposed rationale of this concerted attack on the adrenals is derived from several observations which are sound in themselves. However, the logic whereby the clinical procedures are justified is not beyond reproach: Epinephrine causes a rise in blood pressure; tumors of the adrenal medulla may occur with attacks of hypertension. Therefore, say the proponents of adrenal surgery or irradiation, all (or at least a great many) cases of hypertension are due to hypersecretion of epinephrine and this must (at all costs) be suppressed. Epinephrine in pharmacologic doses causes a rise in blood sugar; ergo, diabetes may be due at least in part to hypersecretion of epinephrine and this must be abolished. Certain tumors of the adrenal cortex may lead to virilism; therefore, hirsutism in the female is due to hypersecretion by the adrenal cortex and subtotal resection of this gland is indicated. The fallacious nature of this generalized reasoning from special and limited cases has been pointed out elsewhere.[4] As Barr [4b] has recently emphasized, "The fundamental soundness of considering ordinary cases of hypertension, obesity and diabetes as possibly related to disturbed pituitary and adrenal function should not blind one to the fact that this is as yet only a hypothesis dependent for its validity in large part on analogy and circumstantial evidence. It must not be forgotten that the present surgical and roentgenologic approach in therapy is experimental and accompanied by no small dangers . . . caution is necessary lest the newer knowledge be applied prematurely and too extensively in surgical and radiologic treatment."

These recommendations of caution are the more important not only because the risk of the therapeutic procedures is considerable but also because the methods themselves do not do what is claimed for them. Thus, while denervation of the adrenals in animals may suppress the secretion of epinephrine for a time, it has been found that the nerves regenerate after several weeks and the epinephrine output returns to its former level.[4a] Removal of one adrenal or subtotal resection leads to functional compensation (with or without morphologic change) of the remaining adrenal tissue. In irradiating the adrenals it is of course impossible to avoid exposure of adjacent organs; and irradiation of the kidneys is one effective method of producing experimental hypertension![5]

1. Rogoff, J. M.: Addison's Disease Following Adrenal Denervation in a Case of Diabetes Mellitus, this issue, p. 279.

2. Chapters XIX and XX of Glandular Physiology and Therapy, Chicago, American Medical Association, 1935.

3. The adrenals have been accused as malefactors so frequently in the literature that the bibliography is too extensive for citation here.

4. (*a*) Rogoff.[3] (*b*) Barr, D. P.: Recent Advances in Endocrinology: Relation to Interpretation and Understanding of Common Symptoms, J. A. M. A. **105**: 1760 (Nov. 30) 1935.

5. Page, I. H.: The Relationship of the Extrinsic Renal Nerves to the Origin of Experimental Hypertension, Am. J. Physiol. **112**: 166 (May) 1935. Experimental Hypertension, editorial, J. A. M. A. **105**: 286 (July 27) 1935.

Excessive conservatism may delay advance in medicine, but interference with the adrenals in the absence of tumor of these organs does not have adequate justification in present knowledge of their functions. The therapeutic hazard in a disorder should not exceed the disease hazard.

THE ANTIANEMIC PRINCIPLE OF THE STOMACH

Since the discovery of the effect of liver and of stomach in the treatment of pernicious anemia, many attempts have been made to elucidate the physiologic processes involved and to clarify the nature of the hematopoietic principle or principles of these organs. Much progress has been made in this field, yet the evidence has remained in large part contradictory and difficult of interpretation.[1]

A fundamental contribution to this problem has now been made by Greenspon,[2] who in a brilliant series of experiments has provided a key to the understanding of this subject. It has been known since the important studies of Castle, and subsequently of others, that the stomach plays a significant part in hematopoiesis and that in pernicious anemia there is a deficient secretion of a substance involved in blood formation. Castle showed that when normal gastric juice was incubated with beef (or with some other substances) the mixture when fed to a patient with pernicious anemia led to a marked reticulocyte response. Gastric juice alone or beef alone was ineffective. Later it was demonstrated that incubated mixtures of pig gastric mucosa and beef also gave a hematopoietic response. Castle elaborated a theory on the basis of these experiments of the existence of an "intrinsic" factor in stomach or gastric juice and of an "extrinsic" factor in beef or other substances which by their interaction lead to the formation of the antianemic principle. However, it has been difficult to reconcile all the known facts with this hypothesis; for instance, the effectiveness of fresh gastric mucosa alone or of whole desiccated stomach. It has been necessary to assume the presence in these materials of some substance that acts as an extrinsic factor.

The experiments of Greenspon now provide a simple explanation for the known facts without hypothesizing the existence of an extrinsic factor. When desiccated stomach was incubated with pepsin and hydrochloric acid and subsequently administered to a patient with pernicious anemia, a reticulocyte response did not occur. Stomach tissue was then depepsinized and administered; a definite hematopoietic effect resulted. The depepsinized tissue incubated with pepsin and hydrochloric acid was inactive; but when it was incubated with hydrochloric acid alone (in the absence of pepsin) reticulocytosis was obtained on administration. Thus it was demonstrated "that (1) the pepsin content of normal hog gastric mucosa could be removed without destroying the antipernicious anemia principle, (2) that peptic activity destroys the antipernicious anemia principle and (3) that hydrochloric acid alone does not."

Greenspon administered calcium carbonate orally to two normal subjects to diminish the acidity of the gastric juice; the latter was then aspirated into a cold container and immediately neutralized. The gastric juice so treated was administered daily to a patient with pernicious anemia; contrary to the results obtained by Castle with untreated gastric juice, a reticulocyte response of 14 per cent occurred on the seventh day. Thus it was shown that, when peptic activity is sufficiently diminished or prevented by neutralization and low temperature, the principle in gastric juice alone is an effective antianemic agent. On the basis of these results Greenspon has reinterpreted Castle's experiments: The beef (or other source of "extrinsic" factor) when incubated with normal gastric juice binds pepsin and prevents it from inactivating the antianemic principle which otherwise occurs unless the precautions adopted by Greenspon are used. It is therefore no longer necessary to assume the existence of an "extrinsic" factor.

Utilizing the knowledge that the antianemic principle in the stomach is inactivated by pepsin, Greenspon has been able to improve greatly on the potency of preparations of stomach tissue developed by Sharp and by Sturgis and Isaacs and of concentrates of gastric juice used by Morris. These fundamental investigations of Greenspon add another important chapter to the physiology of hematopoiesis and clarify with beautiful simplicity many of the confusing issues in this field.

1. The literature is reviewed by Randolph West: Antianemic Material of Liver and Stomach, chapter XXX of Glandular Physiology and Therapy, Chicago, American Medical Association, 1935.
2. Greenspon, E. A.: The Nature of the Antipernicious Anemia Principle in Stomach, this issue, p. 266.

ADOLESCENT PSYCHOSES AND FATE OF PATIENTS WITH MENTAL DISEASE

The psychoses of adolescence[1] are important chiefly because, during this age period, the first manifestations of two mental clinical syndromes appear. The incidence of psychoses rises from the age of 15, before which time psychoses are infrequent. According to Dawson, the history of some adolescent psychoses indicates that a change in disposition may occur several years before hospitalization becomes necessary. The balance during adolescence between biologic urge and control by the higher centers is precarious. Probably some forms of adolescent instability are due to unequal development of the controlling and impulsive mechanisms. Growth should be full of effort. The quiet, passive adolescent is the one who seems most likely to develop the more serious psychoses.

Apart from the delirium that may accompany an acute infective illness, the more lengthy clouding of consciousness that goes by the name of confusion is not a common occurrence in adolescence. In most cases the prognosis is favorable. Occasionally residual

1. Dawson, W. S.: The Psychoses of Adolescence, Brit. M. J. 2: 651 (Oct. 12) 1935.

mental impairment after a severe delirium or confusion is manifest. Closely associated with this group are the mental disturbances of acute encephalitis, taking usually the form of a drowsy delirium, often with hallucinations or illusions of various senses. Although, as in neurosyphilis, actual dementia may occur, the striking features are deterioration of moral sense and the proneness to impulsive violence, which are uncommon in juvenile dementia paralytica.

Dementia praecox and manic-depressive psychosis are especially important at this age. In the former the history of a personality that is inadequate in the emotional rather than in the more purely intellectual field is sufficiently common to be significant. In such sensitive and self-centered persons character development is liable to be stinted through the absence of social contacts, the rivalries and struggles for self expression that should comprise the essence of normal activity. Hence it comes about that the most trivial failure, the merest decline from quite exceptional ideals, throws the adolescent more into himself and adds yet another bar to his self-constructed prison. Thus it is important to draw a distinction between the life of retirement and self denial, which at some periods is creative, and the type under discussion, which is merely indulgent, essentially effortless and futile. In the manic depressive psychosis there is often evidence in the prepsychotic personality of depression and hypochondriacal trends or of other manifestations of instability whereby the patient has usually been regarded by his parents as a "nervous" child. Until, however, there is more continuity of trained observation of the "nervous" child up to maturity, the retrospective assessment of morbid features will remain obscure and full of error and the fundamentals and incidentals will be hopelessly confused. Perhaps the most important advances in the understanding of these psychoses during the last three decades have resulted from a shifting of emphasis from symptoms to personality. From the prognostic standpoint it may be accepted that the more "normal" the person, the richer his interests, the greater the physical or mental stresses before the development of the psychosis and the more rapid the onset of mental symptoms, the better the outlook.

Another and different problem is the question as to what becomes of patients discharged from a mental hospital against advice. This has been recently investigated by Minski [2] on ninety such patients discharged from the Maudsley Hospital. These patients constituted only 2.8 per cent of the admissions and 3.5 per cent of the discharges of the hospital during the period of review. The reasons for leaving may be broadly classified in three groups. In some cases the relatives were asked to arrange removal to another hospital because, after the patients had been under observation for some time, the prognosis was considered to be bad. In other cases the reason was the disturbing behavior which was upsetting other patients. There were twenty-seven in this group. There were thirty-three patients in the group who were taken home by relatives on their own initiative. The hospital is a voluntary one and thirty patients themselves decided to leave because of depressive delusions, paranoid delusions, or feelings of euphoria.

On seventeen of the patients, follow-up information was not available. Twenty-five were in mental hospitals, twenty-four were at home recovered (three after being in mental hospitals), sixteen were at home no better, seven had committed suicide, and one died at home from natural causes. Further subdivision revealed that, of the twenty-five considered suicidal risks, sixteen were in mental hospitals, five were recovered at home, two committed suicide and two were at home no better. Of the sixty-three showing restless behavior or resistiveness to feeding, nine were in mental hospitals, nineteen at home recovered, fourteen at home no better, five committed suicide and one died at home. In view of the high proportion of suicides, Minski concludes, it seems necessary to urge relatives of patients suffering from severe depressive states to send them to suitable hospitals. In general, relatives seem to take a more serious view of states with excitement, since only four manic and three toxic confusional patients were taken home while excited.

Such studies as these are of great practical benefit to society as well as to individual medical men in determining the course of procedure and advice in certain common problems.

2. Minski, Louis: An Investigation into the After-History of Ninety Patients Discharged from a Mental Hospital Against Advice, J. Ment. Sc. 81: 509 (July) 1935.

Current Comment

THE KANSAS CITY SESSION

Arrangements already completed indicate that the Kansas City session of the American Medical Association, May 11 to May 15, will possess many features of extraordinary interest. Practically all the exhibits and the sessions will be held in the new Kansas City Auditorium, one of the largest and finest auditoriums now available in the United States. The business administration of the Association is able to announce at this early date that practically all the exhibit space available for technical exhibits is under contract and that only a few additional booths are now available. The applications for space for the scientific exhibits have overwhelmed the committee and at least a hundred applicants will have to be disappointed on this occasion. The Council on Scientific Assembly, at its recent session with the secretaries of the sections, heard the outlines of new scientific programs equal in interest and usefulness to those of previous sessions. A special meeting will be devoted to problems of tuberculosis. Fifteen lecturers will appear in the General Scientific Meetings on Monday and Tuesday. Two distinguished foreign guests will also appear at these sessions. Lord Horder of England, physician to the premier and

to King Edward VIII, will discuss thyrotoxicosis. He is a competent speaker and a leader in many significant medical organizations abroad. Prof. Afranio do Amaral, director of the Institute of Experimental Medicine in São Paulo, Brazil, will display motion pictures of the celebrated snake farm at Butantan, which is a part of the institute, and discuss the treatment of snake poisoning and the uses of antivenins. Dr. Amaral speaks excellent English, having had much of his training in the United States. The climate of Kansas City in May is salubrious, and its golf courses are numerous and interesting. It will be on its mettle to demonstrate its ability to handle a convention of the scope of the annual session of the American Medical Association. There are indications of a record breaking attendance. Those who plan to participate should arrange to secure hotel reservations as soon as possible.

Medical Economics

THE ASCENT OF THE MEDICAL PROFESSION

B. R. SHURLY, M.D.
AND
E. S. BULLOCK, M.D.
DETROIT

In *Harper's Magazine* for November 1935 appeared a paper by Professor Laski—a mixture of nonsense, truths, half-truths and no truths. His contribution to muddled thinking and irresponsible statement is called "The Decline of the Professions." We hope to show that the title is ill chosen. Had he been competent he would have selected the one that heads this paper.

At present doctors are engaged in a desperate struggle to resist the encroachments of socialized medicine. The problem is not yet acute with lawyers so they are not excited about it, though here and there are found some with the vision to comprehend that what happens to doctors will in the end happen to them. The enemy has already undermined the foundations of individualistic medicine.

ALTRUISM OF MEDICAL PRACTITIONERS

Doctors are among the most altruistic of men. If not so naturally they become so from the consistent pressure brought to bear on them throughout their active lives by their relations to sick and helpless people. They become protective and compassionate toward their fellow men—priests in a sense, occupying a holy temple. Careful studies of the returns from practice show that 40 per cent of their work is without financial remuneration — intelligent charity applied from an unusual opportunity to judge of needs. It is not claimed that they are so Christlike that they render the same joyous and buoyant service to charity patients as to those who come fee in hand. Human nature cannot be that good. However, the service is given freely, an instinctive response to human need. The physician may be a slave to long hours of work for which he is inadequately rewarded and with broken rest at night, as Professor Laski says, but there is a tremendous difference between voluntary and involuntary servitude.

The portion of practice that continues to pay must not only carry living and office expenses, taxes, medical societies, visits to medical conventions, professional journals and books—all the manifold things that make demands on the doctor's purse, but as well withstand the growing competition of public medical agencies for which the doctor often works for poor pay or none at all, such as free clinics, hospitals, industrial and insurance medical organizations and the ever growing and often pernicious activities of boards of health. These are not satisfied to retain the administration of health laws aimed at the control of contagious disease, which originally called them into being, but day by day and year by year reach out in bureaucratic fashion to take unto themselves the actual practice of medicine. Not satisfied with contagious diseases, they now extend their functions to include pregnancy. All of this is done without regard to the antisocial nature of their activities, directed to the pauperization of the people. Under the guise of apparent beneficence and social welfare they steadily undermine the spirit that colonized and developed this country. More than 50 per cent of what was formerly paid practice has already been absorbed by public (free) agencies. In just that proportion medicine is already socialized. All we hope to accomplish is to salvage the remaining 50 per cent that enables the profession to keep its self respect in relative freedom. The part we have lost we relinquish sorrowfully, recognizing that it has been at least partly our own fault. Only too readily have we listened to the siren voice of the whole crew of "welfare" workers. They have taken advantage of the sentimental attitude we have developed in our constant contact with sick humanity. We have become as unrealistic as they are notwithstanding our biologic training, which has taught us that nature through ruthlessly competitive forces has accomplished by her methods our own emergence from the Devonian slime.

LEADERSHIP IN PREVENTIVE MEDICINE

Professor Laski claims that the medical profession is so exclusively occupied with problems of "cure" that the vast field of preventive medicine is neglected. If he had been a medical student any time during the past forty years he would know better than to give utterance to what is not only untrue but constitutes a calumny on medicine. From the day a student enters college, the importance of prevention is ground into him as the chief aim of his professionalism. It is partly at least in devotion to prevention that medicine has been betrayed by socialistic schemes, which often seem a short cut to accomplish a big and important thing such as the control of tuberculosis.

Each forward step in the elimination of disease has been taken by and under the leadership of doctors, who remain through devotion to the ideal of prevention the only class or profession that steadily works to accomplish its own destruction. In this connection it is well to consider that which most readily comes to mind as one of the greatest if not the most important triumph of preventive medicine, namely, the phenomenal decline in the death rate from tuberculosis since 1905 (from 275 per hundred thousand to 56 per hundred thousand), for the moment leaving out of the picture the diminution that started in all civilized countries about 100 years ago as the result of factors about which scientific men continue to argue and know little.

On its face, though, the decline in thirty years is a magnificent accomplishment of preventive medicine. Well, who but doctors conceived it, developed it and keep it going? They remain the heart and soul of the campaign against tuberculosis, though, to be sure, they have had enthusiastic lay assistance. All concede that this campaign has been an important element in the lessened death rate. The method by which it has been mostly accomplished, the segregation of the tuberculous in public institutions, is open to question. Thirty years ago private institutions for these people were being built all over the United States. Various agencies were concerned, social groups, charity organizations, and individuals. For those who desired speed in accomplishment without necessarily counting the cost the problem seemed too big to be left in private hands, so the short cut of tax money was brought to bear. The idea was fathered by the medical profession (always careless of its own interests) as represented by Dr. Vincent Y. Bowditch of Boston,

who in the eighties of the last century declared that tuberculosis, like war, was a state problem. Under his tutelage and that of the National Tuberculosis Association initiated by doctors at Atlantic City in 1905, the states and the federal government have built sanatoriums in almost every part of the Union. Counties also started their own institutions and in the large cities boards of health joined the rush to build public free institutions for tuberculosis. We can all take joy in the result, however it was achieved, and can envision a time say by 1980 when tuberculosis will have ceased to trouble us; but it would have come to pass just the same if it had been left in private hands. The private institutions now find it impossible to compete with those tax supported and are week by week folding up. In Denver the great Agnes Memorial stands silent and deserted, but one of many, and those remaining are in the agony of death.

The task would have been better performed had it been left in private hands, for the basic fault of public institutions, the fact that human nature is not good enough for socialism, is a supreme impediment to the efficient accomplishment of any purpose they undertake. Whatever the result and disregarding the means employed, it constitutes a terrific indictment of the statement that professionally doctors are not sufficiently concerned with preventive medicine. It would take us too far afield to discuss what has been done in controlling malaria, plague, cholera, typhoid, sleeping sickness, diphtheria and so on, but doctors did it all.

Forty years ago if a doctor had some prescription blanks, a stethoscope, a clinical thermometer, a scalpel, obstetric forceps, a urinary test set and a microscope with a few slides and stains he was well equipped for practice. Since that period the increase in cost of medical care has been largely due to the vast development of chemical and physiochemical tests—the laboratory side of medical practice. These tests are expensive and require extensive and elaborate laboratory facilities as well as trained technicians. X-ray equipment, now an essential adjunct to practice, has contributed a large and growing addition to costs, as has the necessity for physical apparatus, as a part of office furnishings, such as violet rays, infra-red rays and short wave diathermy. Medical education too has become more thorough and it takes much longer to turn out a doctor than it did a couple of generations ago, when a three year course on top of a high school diploma was considered sufficient. However, as far as the patient is concerned the increased cost is largely in the laboratory tests and roentgenograms, which are essential to accurate diagnosis and as checks on treatment. All these things have so increased the burden of sickness that only the well-to-do think they can afford to be ill at all. This constitutes the principal element in the pressure to socialize medicine. There is more than one way of eliminating this difficulty without socializing the doctor himself, which, if it comes to pass, will in our opinion constitute a catastrophe for civilization.

RELATIONSHIP BETWEEN PHYSICIAN AND PATIENT

There are few relations in life so satisfactory as those between doctor and patient when the latter seeks medical aid prepared to pay a reasonable and moderate fee for the service rendered. It is a situation full of beauty quite outside its application to the relief of suffering or the cure of disease. The relation of confidence and respect that normally exists between lawyer and client, priest and supplicant is not comparable with it. The family doctor, and long may he live, is the recipient of sacred confidences and the most useful of friends quite outside his medical relations to the patient or family, but, of course, it is on such relations that all others are based. His interest and that of the patient coincide at every point. It is and must remain a peculiarly individual service. Its efficiency is intimately bound up in its private and individual character. Anything that impairs it will be a blow at society, but particularly to those self-respecting elements that stabilize a nation. It cannot retain the essential quality if the doctor becomes an employee of the state. Ask any physician who has walked the wards of public institutions if the service given to the public charges therein is or can ever be the same as to those patients in private practice. No, we proclaim, the heart and spirit go out of medical practice when it becomes an impersonal ministration to those who are but casual incidents in a daily routine.

It is not necessary to abandon the sacred and beautiful attributes of private practice, the validity of which has been established by the collective experience of mankind. There is more than one way out.

It has been settled in this country that education is an essential and proper public function, based as it is on the indubitable fact that a democracy cannot exist without it. The health of the people is also of prime interest and importance. Health laws, the police and administration function of boards of health, adequate medical education do but reflect the quite proper feeling with regard to the whole great question of health. It may be necessary and expedient in order to bring good medical service within reach of the average citizen to extend the already existing public medical set-up to include laboratories equipped for clinical tests and x-ray photography, providing free service for those unable to pay and a small covering fee for those able to shoulder at least a part of the expense. Socialize, if you will, the mechanical and chemical side of medical practice. Doctors care little about it if they themselves are but left out of the picture.

MEDICAL COSTS AND THE FAMILY BUDGET

Nevertheless the actual fault is not nor has it ever been the cost of medical care. It lies rather in the failure of the people to take medical costs into consideration in the family budget, directly or by insurance. There is always a place for the automobile (one in six of the population), for "movies," baseball games and beauty parlors and so on ad infinitum.

Medical fees do not complicate the problem to any extent, for they have always been subject to arbitration. The noted specialist who charges a large fee will, if the matter is presented to him, take what the patient can pay rather than send him to a free clinic and encourage pauperization. The care of the sick poor, dyed in the wool variety, has always been a government function. It should be adequate as to essentials but should make no attempt to furnish frills. As an illustration of pauper psychology as it is being nourished in the United States it is illuminative to visit on any Sunday afternoon the poorhouse—which may have a fancy name, such as Eloise Hospital—attached to any large city and count the vast array of automobiles of visitors to relatives confined therein, mostly old fathers and mothers whose support might interfere with gas for the car or a permanent wave.

Turn where you will in this country today and witness one grand contradiction of the spirit which 300 years ago took a man and his growing family into the hinterland of Massachusetts with belongings confined to the clothes on their backs, gunpowder and bullets, a few blankets, an ax, pots and pans, to face a New England winter and the Pequot Indians with the courage derived from a thousand years of yeomanry. When that spirit is dead it will be time for socialism. We shall be good for nothing else.

THE OTHER SIDE OF THE SHIELD

Professor Laski's unfitness for the task he assumes cannot be better illustrated than by what he says of the medical profession's relations to osteopathy, to which he refers as "a discipline struggling for recognition." Osteopathy means to a physician what a flat earth means to a cosmographer—that

and only that—for it is nothing but a "cult" based on ignorance, a short cut for the tough-minded and ruthless around the long and wearisome struggle to achieve adequate preparation for a scientific and sacred calling. As long as the average man remains the simple creature he is there will be cultists who, lacking a moral sense, are prepared to trade on ignorance added to credulity.

Again, Professor Laski says that "the average doctor who becomes a general practitioner is largely a prisoner serving a life sentence." This is one of those statements both true and false at the same time. He does not consider that the servitude is voluntary and may be served with daily satisfaction and often joy. Father Damien among the lepers was in a sense a slave, as we all are, especially those for whom "duty" still has a meaning; but it is improbable that he would have so regarded himself, nor do we doctors who ask that there shall remain enough patients able and willing to pay to permit us to be moderately comfortable while we practice our own chosen brand of voluntary servitude, which most of us continue to prefer to that of working for Uncle Sam as a doctor in one of the public services, the army or the navy. After knowing hundreds of doctors over a period of forty years, we feel that they have security now—at least all they deserve and all that is good for them.

Professor Laski also says that "doctors have little chance to keep up with their profession in any profound way." We of the profession know there is no lack of opportunity to grow and develop. Our all too many medical societies furnish that and they cover the land right down to the counties, where the leading men may be seen, heard and argued with in the free discussions that follow every paper, in which all are permitted to share. Thousands and thousands still find means to travel all over the land to attend medical meetings and conventions. We do not place the trouble where Professor Laski does but find it in the fact that many, all too many, doctors are too lazy (not too tired) to take advantage of the many agencies that are directed to professional improvement.

Again, Professor Laski accuses doctors of neglecting research. That is true and it is well that it is so, for research as such, laboratory research, requiring elaborate, expensive apparatus, is a life work in itself. Even if he is able to afford it, the time necessary is not available in the working day of the average practitioner. It is better performed by those connected with the teaching and scientific institutions. There is a type of research that is within the reach of all doctors and which, on the whole, is well performed: the study of one's own cases, and checking in actual practice the discoveries made by the professional researcher. One of us many years ago was told by Dr. Robert Koch, a country doctor who discovered the cause of tuberculosis and cholera, "I happened down a road no one else had traveled and I could pick up nuggets almost any place I looked. The road is now well traveled and the nuggets are harder to find." His meaning was that research had become highly organized and specialized. The average doctor is but a finer edition of the average man, and research will be the better for his leaving it alone.

The statement most to be resented and which wracks a sense of justice and fair play is: "The profession, as a profession, lacks that sense of urgent obligation to the public which alone could effect the radical reforms that are necessary." If true, anything done to the profession of medicine would be justified —even socialization. Fortunately, in stating it he but betrays his profound ignorance of the spirit of medical practice or professionalism. There is no cure for him: he is too far gone in collectivism. He has become a fanatic. To those who remain amenable to reason it is recommended that the transactions of medical societies be consulted, in which nearly every page bears witness that the motive force in medical professionalism is a profound sense of public obligation.

The faults Professor Laski presents are found on examination to be but half-truths when not wholly without truth. He has exhibited an almost complete misunderstanding of the spirit of medicine. He never turns the shield to see what is on the other side. He pours his allegations like sand through a funnel, the separate grains too numerous for attention. It is hoped that the other side of the shield has been presented here and that it justifies faith in the continuance of individualized professionalism as well as a conviction that we are going forward as fast as human nature permits.

62 Adams Avenue West.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS

Program of Meetings to be held in Chicago, February 17 and 18

The thirty-second Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 17 and 18. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 17, 10 A. M.

RAY LYMAN WILBUR, M.D., Presiding

Report of the Council on Medical Education and Hospitals
Ray Lyman Wilbur, M.D., LL.D., Chairman, Stanford University, Calif.

The Accrediting of Higher Institutions
George F. Zook, Ph.D., President, American Council on Education, Washington, D. C.

Discussion: George A. Works, Ed.D., Chicago.

Consistency Versus Chaos in Medical Education and Licensure
Walter L. Bierring, M.D., Secretary, The Federation of State Medical Boards of the United States, Des Moines, Iowa.

Discussion: James N. Baker, M.D., Montgomery, Ala.

The State University and Professional Education
Arthur C. Willard, S.B., LL.D., President, University of Illinois, Urbana.

Discussion: Eugene A. Gilmore, LL.B., LL.D., Iowa City.

Red Lacquer Room

MONDAY, FEBRUARY 17, 2 P. M.

MERRITTE W. IRELAND, M.D., Presiding

The Personality of the Teacher
James S. McLester, M.D., President, American Medical Association, Birmingham, Ala.

Discussion: Charles F. Martin, M.D., Montreal, Quebec.

Scope and Objectives of the Undergraduate Teaching of Obstetrics
George W. Kosmak, M.D., New York.
Charles B. Reed, M.D., Associate Professor of Obstetrics, Northwestern University Medical School, Chicago.
Robert T. Riley, M.D., Director, State of Maryland Department of Health, Baltimore.

Discussion: Fred L. Adair, M.D., Chicago; Paul Titus, M.D., Pittsburgh; Waller S. Leathers, M.D., LL.D., Nashville.

Red Lacquer Room

TUESDAY, FEBRUARY 18, 9:30 A. M.

REGINALD FITZ, M.D., Presiding

What Is the Social Objective of the Young Physician?
Nathan B. Van Etten, M.D., Speaker, House of Delegates, American Medical Association, New York.

Discussion: Roscoe L. Sensenich, M.D., South Bend, Ind.

Some Observations on the Social Background of Medical Practice in Great Britain
Richard E. Scammon, Ph.D., LL.D., Distinguished Service Professor in the Graduate Faculty of the University of Minnesota, Minneapolis.

Discussion: Wilburt C. Davison, M.D., Durham, N. C.

Instruction of Students and Interns in the Legal, Social and Economic Influences Affecting Medical Practice
Stanhope Bayne-Jones, M.D., Dean, Yale University School of Medicine, New Haven, Conn.

Discussion: Rev. Alphonse M. Schwitalla, S.J., Ph.D., St. Louis.

Can the Present Medical Curriculum Achieve the Proper Aims of Medical Education?
Langley Porter, M.D., Dean, University of California Medical School, San Francisco.

Discussion: John Wyckoff, M.D., New York.

Red Lacquer Room

TUESDAY, FEBRUARY 18, 2 P. M.

FRED MOORE, M.D., Presiding

Swans Sing Before They Die
Elias P. Lyon, M.D., LL.D., Dean, University of Minnesota Medical School, Minneapolis.

Function of the Hospital in the Training of Interns and Residents
J. A. Curran, M.D., Executive Secretary, New York Committee on the Study of Hospital Internships and Residencies, New York.

Discussion: Harvey Agnew, M.D., Toronto, Ontario.

The Laboratory of Pathology in the Small Hospital
Howard T. Karsner, M.D., Professor of Pathology, Director of the Institute of Pathology, Western Reserve University and the University Hospitals, Cleveland.

Discussion: A. S. Giordano, M.D., South Bend, Ind.

Newer Points of View Concerning the Use of the Outpatient Department in Medical Education
W. McKim Marriott, M.D., Dean, Washington University School of Medicine, St. Louis.

Discussion: Robert W. Keeton, M.D., Chicago.

Red Lacquer Room

THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

TUESDAY, FEBRUARY 18, 9:30 A. M.

IRVIN D. METZGER, M.D., Presiding

The Federation and the Survey of Medical Schools
William D. Cutter, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago.

The Two-Year Medical School
George M. Williamson, M.D., Secretary, North Dakota State Board of Medical Examiners, Grand Forks.
Benjamin J. Lawrence, M.D., Secretary, North Carolina Board of Medical Examiners, Raleigh.

Comments on National Board Examinations
J. Stewart Rodman, M.D., Medical Secretary, National Board of Medical Examiners, Philadelphia.
Everett S. Elwood, Executive Secretary, National Board of Medical Examiners, Philadelphia.

Final Objective
Harold Rypins, M.D., Secretary, Board of Medical Examiners of the State of New York, Albany.

Discussion: John H. J. Upham, M.D., Columbus; Willard C. Rappleye, M.D., New York.

Room Fourteen

TUESDAY, FEBRUARY 18, 1:30 P. M.

IRVIN D. METZGER, M.D., Presiding

Narcotic Legislation
William C. Woodward, M.D., LL.D., Director, Bureau of Legal Medicine, American Medical Association, Chicago.

Enforcement Procedure
Thomas J. Crowe, M.D., Secretary, Texas State Board of Medical Examiners, Dallas.
Herbert M. Platter, M.D., Secretary, Ohio State Medical Board, Columbus.

Aggressive Versus Passive Attitudes of State Board Members
Arthur C. Morgan, M.D., Member, Pennsylvania State Board of Medical Education and Licensure, Philadelphia.

Foreign Medical Credentials
Charles B. Pinkham, M.D., Secretary, California Board of Medical Examiners, San Francisco.

Experience with Basic Science Law in Nebraska
Henry J. Lehnhoff, M.D., Secretary, Nebraska Board of Examiners in Medicine, Lincoln.

The Importance of Introducing Psychiatry as a Requirement for Licensure
Franklin G. Ebaugh, M.D., Director, Division of Psychiatry Education, The National Committee for Mental Hygiene, and Director, University of Colorado Psychopathic Hospital, Denver.

Discussion: John R. Neal, M.D., Springfield, Ill.; J. Earl McIntyre, M.D., Lansing, Mich.; Roy B. Harrison, M.D., New Orleans.

EXECUTIVE SESSION.

Room Fourteen

Federation Dinner

The annual dinner of the Federation of State Medical Boards of the United States will be held Monday, February 17, at 6:30 at the Palmer House. All attending the congress are invited.

PROGRAM

Address: The Responsibility of a University in Medical Training
Eugene A. Gilmore, LL.B., LL.D., President, State University of Iowa, Iowa City.

Address: The Art of Medicine
Irvin D. Metzger, M.D., President, The Federation of State Medical Boards of the United States, Pittsburgh.

Round Table Discussion—State Board Problems.

Reduced Railway Fares

Reduced railway fares will be in effect for those who attend the congress. In some cases excursion rates are offered. In most instances the reduced rate will be on the certificate plan. Those planning to attend the congress should make inquiry of the railroad ticket agent before purchasing transportation to Chicago.

JUDICIAL COUNCIL ACTION IN ROSS-LOOS CASE

Opinion and Decision of the Judicial Council of the American Medical Association in the Case of the Appeal of Dr. H. Clifford Loos and Dr. Donald Ross from the Decision of the Council of the California Medical Association Affirming the Action of the Los Angeles County Medical Association Expelling Said Members from Membership Therein

The authority of the Judicial Council in the appeal of Drs. Loos and Ross and similar cases is clearly outlined and delimited in the By-Laws of the American Medical Association, chapter IX, section 1, in the following words:

> The judicial power of the Association shall be vested in the Judicial Council, whose decision shall be final. . . . In all cases which arise . . . (c) between a member or members and the component society to which said member or members belong . . . the Judicial Council shall have appellate jurisdiction in questions of law and procedure but not of fact.

The foregoing constitutional limitation on any review of the merits of a case therefore prevents the Judicial Council from expressing any opinion as to the guilt or innocence of the appellants in connection with any unethical practices alleged and charged against them.

Therefore the questions on which this council must render its decision are: 1. Were the appellants properly and lawfully apprised of and charged with an offense? 2. Were they properly and lawfully tried? and 3. Were the procedures fair, just and without material error?

The provisions for the disciplining of members appearing in the by-laws of the Los Angeles County Medical Association are as follows:

> Article II, Section 5. Whenever a member of this Association is charged with a criminal offense or gross misconduct, either as a physician or a citizen, or is charged with the violation of any of the provisions of the Articles of Incorporation and By-Laws, he shall be notified by the Board of Councilors to appear before that body within ten days to show cause why he should not be censured, suspended or expelled. . . . After a full hearing of the case, the Board of Councilors have power by a three-fourths vote to censure, suspend or expel the member without a written or verbal explanation of its reasons, such action to be effective only after a right to appeal to the Council of the California Medical Association is given the accused.

The record shows and no denial by either appellant or respondent is made that on a certain date the appellants were served with a notice to appear eleven days later before the council of the association to show cause why they should not be censured, suspended or expelled from membership. No statement of definite charges nor indication of the nature of any charges were contained in the summons. On receipt of the summons the appellants by telephone inquired from the secretary of the association what the nature of the inquiry would be, whether they should bring their books or witnesses and whether they should be attended by their attorney. As stated by the secretary,

> The reply was in rough terms that the Council wanted to inquire into their relationship to advertising matter, particularly the circular that had just been circulated among the teachers of the Los Angeles County schools. He asked me if they should bring attorneys and I told him that usually the discussions before the Association were between members and the Council, and he asked should we want their books or witnesses and I told him usually they were not brought but that he could do as he wished.
>
> My answers to him over the telephone were guided by an attempt to be as noncommittal and impersonal as I could.

Dr. Loos and Dr. Ross appeared as cited and a report by the association's medicolegal committee was read in which definite charges were made, supported by direct statement of the committee that the matters reported were true. Certain other matters were charged on the basis that "we are informed that." Dr. Loos and Dr. Ross denied all charges, explaining each one and offered to bring legal evidence of the truth of their statements "if the Council wished." A general discussion developed during which matters not contained in the medicolegal committee's report were included, after which Dr. Loos and Dr. Ross were excused. Following their retirement the council voted to expel Dr. Loos and Dr. Ross and also adopted the report of the medicolegal committee.

It is a fundamental principle of American jurisprudence (1) that a person shall be considered innocent until he has been proved guilty, (2) that an accused person shall know of what

he is accused, (3) that he shall have adequate opportunity to defend himself, (4) that he shall not be punished for an act not included in the charges against him, and (5) that he shall have a fair trial.

Every one of the foregoing five principles was violated in the trial of this case before the council of the Los Angeles County Medical Association. There is nothing in the record of this case and nothing in the hearing before the Judicial Council showing that these men had been proved guilty of anything covered by the report of the medicolegal committee of the county association. No supporting evidence to that report was offered and so far as the record shows the committee on the one hand charged offenses and the appellants on the other denied them. The appellants at the time offered to submit proof of their denial, which later in fact they did in the form of sworn statements by officials of the organizations involved, which were presented in the appeal of the appellants to the California Medical Association. On the side of the Los Angeles County Medical Association was only circumstantial evidence sufficient to cause strong suspicion but insufficient to convict.

No indications of what the charges were appeared in the summons to appear and show cause. The appellants tried to learn from the proper officer, the secretary of the association, what the charges were. Instead of informing them, if indeed he knew, since the report of the medicolegal committee which constituted the charges was not adopted by the Board of Councilors until after the hearing was held, the secretary himself testified that he answered the inquiry "in rough terms that the Council *wanted to inquire* into their relationship of advertising matter." He also testified that, in answer to the question as to whether the appellants should bring attorneys, "usually the *discussions* before the association were between members and the Council." He carefully evaded any appearance of there being a formal trial and avoided telling them of what they were charged. They were doubtless lulled by the appearance of informality and dissuaded thereby from bringing supporting evidence to any statement they might wish to make, by the absence of any charges in the summons and the evasiveness of the secretary in answering their inquiries as to the character of the charges. It is quite apparent that, whether guilty or not, they did not have a fair trial.

The by-laws of the California Medical Association providing for the disciplining of the members of all its component county medical societies are as follows:

> Chapter II, Section 3: No member of a component county society shall be deprived of his membership unless by his own act, except by a two-thirds affirmative vote of all the active members in good standing of the component county society to which he belongs, present and voting at a regular meeting thereof, or by a two-thirds vote of its council or board of directors, present and voting at a regular meeting thereof, and only after at least six weeks written notice personally delivered to the member has been served upon him, fully stating the charges against him, and only after such member shall have been given full opportunity to be heard in his own defense at such meeting.

The by-law of the California Medical Association is explicit, fair and just and does not offend the principle of proper protection of the rights of membership in the county, state and national organizations. The similar by-law of the Los Angeles County Medical Association on the contrary is vague, unfair and arbitrary and fails to give adequate protection to every member of that society. At any time a small group of members having obtained positions of authority may use such authority against any member said group elects to prosecute or persecute and the member has only the protection of a time-consuming, expensive appeal to the Council of the state association or the Judicial Council of the American Medical Association.

The California Medical Association is the creative and authoritative body over the Los Angeles County Medical Association. The county medical association is a unit in organized medicine because of the charter granted it by the said state association. Therefore a by-law of the county society inconsistent and in conflict with a similar one of the state association is null and void. The by-law of the California Medical Association previously quoted provides that "no member of a component society" shall be deprived of his membership except as provided therein. This covers the membership of the Los Angeles County Medical Association as well as the membership of every other component society.

It is admitted by the respondents that the whole procedure in the Los Angeles County Medical Association was irregular and prejudicial to the interests of the appellants and that they were entitled to the protection of the by-law of the state association, but that by answering the summons, attending the meeting as directed and defending themselves against the report of the medicolegal committee they waived those rights provided by the state association by-law. The Judicial Council is not impressed by this argument. The record shows that several times previous to this action the appellants had been called before the society's representatives for discussion and explanation of their operations; that at no previous time had such formal notice been given and therefore an effort was made to learn from the proper officer what matter would be brought up, in order to be properly prepared; that the appellants were lulled by that officer's evasiveness; that because of that evasiveness they were not prepared to present denial supported by legal evidence but that they offered to obtain such evidence; that in fact they did produce such sworn evidence before the council of the state association later on. If a claim of waiver is to be made, it is the obligation of the party making the claim to show that there was an intent to waive. Such an intent cannot be assumed simply because an accused cited to appear does so appear and make general denial, and especially if the accused offers to produce further evidence by witnesses not then available to support the denials.

For the following briefly summarized reasons, viz.:

(*a*) The appellants were brought to trial with no definite knowledge of what they were charged;

(*b*) They had no adequate opportunity to defend themselves;

(*c*) They were expelled for some unknown act not appearing in the charges, and

(*d*) They did not have a fair trial,

which appear in full in the foregoing analysis, the Judicial Council supports the appeal of Dr. H. Clifford Loos and Dr. Donald Ross from the decision of the Council of the California Medical Association, which affirmed the action of the Los Angeles County Medical Association expelling said physicians from membership therein.

GEORGE EDWARD FOLLANSBEE.
WALTER F. DONALDSON.
LLOYD NOLAND.
JOHN H. O'SHEA.

Jan. 2, 1936.

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network.—The stations on the Red network of the National Broadcasting Company are WEAF, WEEI, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

Pacific Network.—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

January 28. Health of the Traveler, W. W. Bauer, M.D.
February 4. Pneumonia, W. W. Bauer, M.D.
February 11. Little Tips on Home Hygiene, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Dr. Carrel Appointed Professor for a Semester.—Dr. Alexis Carrel of the Rockefeller Institute for Medical Research, New York, has been appointed Hitchcock professor at the University of California, Berkeley, for the spring semester. The Hitchcock professorship was established by a fund started in 1872 to provide "free lectures on the campus upon scientific and practical subjects but not for the advantage of any religious sect nor upon political subjects."

Personal.—Dr. Edwin S. Bennett has been appointed medical director of Olive View Sanatorium, succeeding the late Dr. William H. Bucher.——Dr. John M. Scanland, medical superintendent, Agnews State Hospital, Agnew, has been appointed superintendent of the Napa State Hospital, Imola, succeeding the late Dr. Carl A. Johnson. Dr. Scanland was named superintendent of the institution for the first time in 1922, when he came from Montana to California, but resigned in 1925 to enter private practice.

Society News.—At a meeting of the Alameda County Medical Association in Oakland, January 20, speakers were Drs. William O. Solomon on "Lipoma of the Broad Ligament" with case report; John A. Dougherty, "Ureteral Obstruction," and Roy F. Nelson, "Bronchoscopy for the Obstetrician?" Dr. Paul P. E. Michael presented pathologic material.——At a meeting of the San Diego County Medical Society, January 14, in San Diego, speakers were Drs. Frederick C. Warnshuis, San Francisco, Robert A. Peers, Colfax, and Edward M. Pallette, Los Angeles, secretary, president and president-elect, respectively, of the California Medical Association.

COLORADO

County Society Changes Name.—The Kit Carson County Medical Society has changed its name to Eastern Colorado Medical Society, effective January 1. The change was made because the Kit Carson County Medical Society includes three counties: Kit Carson, Cheyenne and Lincoln, these being the three east-central counties of the state.

CONNECTICUT

In Memory of Professor Mendel.—The December issue of *Health*, the monthly bulletin of the New Haven Department of Health, was dedicated to the memory of Lafayette B. Mendel, Ph.D., who, at the time of his death, Dec. 9, 1935, was Sterling professor of physiologic chemistry at Yale University School of Medicine, New Haven.

Society News.—Dr. Maurice Brodie, New York, discussed "Treatment and Prevention of Poliomyelitis" before the Waterbury Medical Association in Waterbury, December 12.——Dr. Cyril N. H. Long, Philadelphia, addressed the Yale Medical Society in New Haven, December 11, on "Effects of Hypophysectomy and Adrenalectomy upon Experimental Diabetes."

DISTRICT OF COLUMBIA

Medical Bills in Congress.—*Changes in Status:* S. 1016 has passed the House, empowering the health officer of the District of Columbia to authorize the opening of graves and the disinterment and reinterment of dead bodies in cases in which death has resulted from certain contagious diseases. S. 2013 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Pak Chue Chan. S. 2939 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Roland A. Cox. S. 3284 has passed the Senate, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Dexter P. Reynolds. H. R. 8437 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr. Arthur B. Walker.

ILLINOIS

Communicable Diseases in Rural Population.—The mortality rate from typhoid, measles, whooping cough and malaria was twice as great among the rural as among the urban population of Illinois in 1934, according to the state department of public health. These diseases gave an aggregate death rate of 14.6 for rural and 7.1 for urban population. The death rate among rural citizens for scarlet fever, diphtheria, tuberculosis and infantile diarrhea ranged from 25 to 40 per cent higher than among the city population, giving an aggregate mortality rate of 84.9 per hundred thousand for the rural population and 60.6 for urban population. Pneumonia, according to the study, was the only infectious disease which caused a higher mortality rate among those in urban than among those in rural districts, giving a death rate, respectively, of 72.8 and 65.5 per hundred thousand of population.

Chicago

Society News.—Dr. Albert H. Freiberg, Cincinnati, was the guest speaker before the Chicago Medical Society, January 22; he discussed "Sciatic Pain." The society held a memorial meeting, January 19, at Murphy Memorial Hall.——The Chicago Society of Allergy was addressed, January 20, by A. G. Wedum, Ph.D., on "Specificity of Immunological Reactions as Illustrated by Studies of Chemoproteins," and Dr. Michael Zeller, "Leukopenic Index in Allergic Individuals."——Dr. Francis Park Lewis, Buffalo, discussed "The Evolution of Ophthalmology in the Past Century" at a meeting of the Chicago Ophthalmological Society, January 20.——Speakers before the Chicago Pediatric Society, January 21, were Drs. Abraham B. Schwartz, Milwaukee, "Rational Treatment for Abnormally Attached Frenum Labium"; William H. G. Logan, "Indications for Surgical Treatment of Cleft Palate and Cleft Lip," and Thomas L. Grisamore, D.D.S., "Primary and Major Indications for Orthodontia."

Dr. Geiling Named Professor of Pharmacology.—Dr. Eugene M. Karl Geiling, associate professor of pharmacology and experimental therapeutics, Johns Hopkins University School of Medicine, Baltimore, has been appointed professor of pharmacology and head of a newly created department of pharmacology at the University of Chicago. Pharmacology was formerly included in the department of physiologic chemistry and pharmacology. Under the new arrangement it becomes a separate department, and the older department, of which Prof. Fred C. Koch is chairman, has been renamed the department of biochemistry. Dr. Geiling is 44 years of age and a native of South Africa. He received his degree of doctor of philosophy from the University of Illinois in 1917 and his medical degree from Johns Hopkins in 1923. In the same year he was appointed assistant in pharmacology at his alma mater. He has been associate professor since 1925. In 1932-1933 he was chairman of the Section on Pharmacology and Therapeutics of the American Medical Association. Dr. Geiling's research has dealt with physiologic chemistry; nutritive value of amino acids; blood regeneration; pharmacology, chemistry, function and interrelation of endocrines, and the pharmacologic action of protein split products and albumoses.

INDIANA

Secretaries' Conference.—The annual conference of the county society secretaries of the Indiana State Medical Association will be held at the Columbia Club, Indianapolis, February 2. The speakers will include:

Mr. Ross Garrett, Washington, D. C., The Washington Plan.
Dr. Oliver O. Alexander, Terre Haute, Medical Ethics in Everyday Practice.
Dr. Franklin S. Crockett, Lafayette, Work of the Liaison Committee with the Township Trustees.
Dr. Lyman T. Rawles, Fort Wayne, The Local Societies and High School Debates.
Dr. Frederick E. Elliott, Brooklyn, New Deal Exploitation of Medical Practice.
Dr. Albert S. McCown, Washington, D. C., Indiana's Program in Maternal and Child Welfare Under the Social Security Act.
Dr. Cyrus J. Clark, Indianapolis, Graduate Education Program.
Dr. Verne K. Harvey, Indianapolis, Policies of the State Division of Public Health.
Dr. Eldridge M. Shanklin, Hammond, Your State Medical Journal.
Dr. Edward A. Meyerding, St. Paul, Relation of the Individual Physician to the County and the State Medical Societies.
Dr. Olin West, Chicago, Today's Medical Economic Problems and the County Society.

In addition, Drs. Roscoe L. Sensenich, South Bend, and Edmund D. Clark, Indianapolis, president and president-elect, Indiana State Medical Association, respectively, will speak. Dr. Albert M. Mitchell, Terre Haute, will preside.

Society News.—At a meeting of the Indianapolis Medical Society, January 28, Dr. Albert Murray DeArmond will discuss alcohol; Dr. Paul G. Iske, morphine, and Dr. William M.

Dugan, tobacco.——The LaPorte County Medical Society was addressed in Michigan City, December 19, by Dr. Eric Oldberg, Chicago, on "Fractures of the Spine."——Dr. Matthew Winters, Indianapolis, discussed "Vomiting in Children" before the Tipton County Medical Society in Tipton, December 19.——At a meeting of the Marshall County Medical Society in Plymouth, December 4, Dr. Raymond W. Spenner, South Bend, discussed "Hypertensive Heart Disease."——Dr. Homer H. Wheeler, Indianapolis, addressed the Fayette-Franklin Medical Society in Connersville, December 10, on "Diseases of the Rectum."——At a meeting of the Jay County Medical Society in Portland, December 6, Dr. Harvey L. Murdock and Dr. Bonnelle W. Rhamy, Fort Wayne, discussed undulant fever.——Dr. Robert B. Sanderson, South Bend, addressed the St. Joseph County Medical Society in South Bend, November 12, on "Diagnosis and Treatment of Pulmonary Tuberculosis."——At a meeting of the Northeastern Indiana Academy of Medicine in Kendallville, December 19, speakers were Drs. Bruce K. Wiseman, Columbus, on "Differential Diagnosis and Treatment of Blood Diseases Characterized by Enlargement of the Spleen," and Edmund M. Van Buskirk, Fort Wayne, "X-Ray Study of the Heart Shadow."——Dr. Louis G. Herrmann, Cincinnati, discussed "Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Disease" before the Fort Wayne Medical Society, December 17.

KANSAS

Personal.—Dr. Alexander C. Flack, Fredonia, was guest of honor at a dinner given recently by the Wilson County Medical Society in observance of his completion of fifty years in the practice of medicine.——Dr. John Clifton, Vermillion, has been appointed health officer of Marshall County, succeeding Dr. Charles E. Gaston, Frankfort, resigned.——Dr. Karl Menninger, Topeka, has recently been made one of the editors of the *International Journal of Psycho-Analysis.*

Course in Mental Hygiene.—The Shawnee County Mental Hygiene Society recently sponsored a course in mental hygiene, with Drs. Karl A. Menninger, Robert P. Knight and Nathan W. Ackerman, as lecturers. Following is the list of topics: November 4, 1935, "Definition and History of the Mental Hygiene Movement"; November 11, "Psychodynamics of Normal Child Development"; November 18, "Problem Children"; November 25, "Juvenile Delinquency"; December 2, "Mental Hygiene of Adolescence"; December 9, "Marital Relationships"; January 6, "Early Manifestations of Common Mental Illnesses." A summation of the course was presented, January 13.

KENTUCKY

Society News.—Dr. George W. Payne, Bardwell, addressed a joint meeting of the Carlisle, Ballard and Hickman county medical societies in Wickliffe, December 3, on the barbiturates.——Dr. Emmet F. Horine, Louisville, addressed the Madison County Medical Society, Richmond, December 19, on "Practical Management of Cardiovascular Emergencies."——Dr. Chevalier L. Jackson, Philadelphia, addressed the Jefferson County Medical Society, Louisville, January 20, on "Bronchoscopy as an Aid in Diagnosis."

MARYLAND

New Chief of Bureau.—Arthur W. Hedrich, Sc.D., associate in biostatistics, Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been appointed chief of the bureau of vital statistics of the Maryland State Department of Health. Dr. Hedrich is at present on a leave of absence from the university, being attached to the U. S. Public Health Service as director of the Chicago district in the survey of chronic disease. Drs. George E. Bennett and Joseph Earle Moore, both of Baltimore, have been named consultants in the department.

Health in Baltimore.—In 1935 the same general death rate as in the previous year, 13.3 per thousand of population, was maintained in Baltimore. Of the communicable diseases, syphilis was the most prevalent in 1935, 5,755 cases having been reported, according to provisional figures. Meningococcic meningitis increased, with 182 cases and seventy-two deaths, as compared with ten cases and four deaths in 1934. This is the first time since records have been kept for this disease, with the exception of the war years 1917 and 1918, that there have been more than seventy cases. A new low record for deaths from diphtheria was achieved; 119 cases were reported, as compared with 108 in 1934; two deaths occurred among residents of Baltimore. No diphtheria death occurred during the year until October 13, when the death of a child was the first reported in a resident, one year and sixteen days after the last reported death. The five principal causes of deaths in Baltimore were the same as in 1934 with 60 per cent of all deaths attributed to them: heart disease, cancer, pneumonia, chronic nephritis and tuberculosis. The infant mortality rate in 1935 was 55.9 per thousand live births, as against 65.2 for the previous year. Deaths from automobile accidents declined from 225 in 1934 to 198 in 1935.

MASSACHUSETTS

Personal.—Dr. Tracy Putnam, professor of neurology, Harvard Medical School, Boston, delivered the second annual Block Memorial Lecture of the Fulton County Medical Society at the Academy of Medicine in Atlanta, January 23, on "The Cerebral Circulation and Its Disorders."

Activities of Society for Mental Hygiene.—The Massachusetts Society for Mental Hygiene is holding a conference on mental health in education at the Parker House, Boston, January 25, in cooperation with the Massachusetts Teachers' Federation. A survey of the social, health and educational agencies of Springfield began, January 13, at the request of the Council of Social Agencies and the Community Chest of Springfield. After the Springfield survey, Dr. Henry B. Elkind, Boston, medical director of the Massachusetts society, will conduct a survey of the work of the Illinois Society for Mental Hygiene, at the request of the National Committee for Mental Hygiene. Dr. Donald Gregg, Wellesley, was chosen president of the Massachusetts Society for Mental Hygiene at its annual meeting, Nov. 20, 1935.

MICHIGAN

Campaign Against Pneumonia.—Funds have been made available by the Common Council of Detroit to continue this winter the campaign against pneumonia which was inaugurated last year. The funds provide types I, II and VII antipneumonia serum for pneumonia patients afflicted with these types in hospitals where adequate laboratory service and nursing care are available, when it is a financial hardship for the patient to procure the serum. Physicians who have cases of pneumonia are urged to send at once to the health department's laboratory a fresh specimen of sputum for determination of the type of pneumococcus present. Special physicians at hospitals will be able to secure the proper serum.

Annual Report of Children's Fund.—A total of $567,888.30 was expended by the Children's Fund of Michigan during the past fiscal year to finance its work in emergency relief, public health, child guidance, medical research and child dependence. According to the sixth annual report, 450,000 children received some sort of service. The largest portion of expenditures, $280,000, was in the field of child health, most of which was carried on in the northern part of the state. A general inspection of all children in Detroit public and parochial schools, which was part of the general dental program, revealed that 30 per cent did not need dental service, a very high percentage, it is believed.

With the employment of one health educator, a small part of the health education program abandoned in 1933 was revived. The report points out that the project in Muskegon County of boarding delinquent children in private families rather than sending them to state correctional institutions continues interesting. It is believed that the reform of many children may be accomplished without the damaging experiences in institutions. Special studies were conducted on the growth problems of well infants, in addition to various other lines of research. Green Pastures at Little Pleasant Lake in Jackson County for Negro children was operated at full capacity during twelve weeks of the summer of 1934 by the Detroit Urban League. In addition, the special education department of the Detroit Public Schools used the camp during June, sending 100 problem boys there. The program to correct visual defects was continued. Two ophthalmologists were sent into twelve counties and the Otter Lake Billet of the American Legion to supply glasses to children who needed them. So successful has been the Northern Children's Clinic at Marquette, now in its fourth year, that a similar clinic will be established this year at Traverse City, and a new children's clinic, planned after the ambulatory clinic connected with the St. Luke's Hospital at Marquette, will be erected.

Senator Couzens, who established the Children's Fund with an endowment of $10,000,000, has given an additional $2,156,675.89, with no stipulations other than those contained in the original trust instrument of April 1929, which created the fund "to promote the health, welfare, happiness, and development of the children in the State of Michigan primarily, and elsewhere in the world." It is the intention of the donor that by May 1, 1954, the entire sum be spent for the purposes for

which it was created. All projects which come under the headings of public health, material relief, preventive medicine, dentistry, research, mental hygiene, education and recreation will be assured of continued interest, it was stated.

MINNESOTA

Operator of "Rest Home" Sentenced.—Della Mostert, 56 years of age, following her plea of guilty to a charge of performing an abortion, was sentenced to a term not to exceed four years at hard labor at the Woman's Reformatory at Shakopee. Mrs. Mostert, who has been working as a practical nurse and operating a rest home, admitted to the judge that she had been engaged in this illegal work for the past seven or eight years. In the present case the girl died thirty-six hours after the abortion was performed and the cause was given as gas bacillus infection. Mrs. Mostert was given the opportunity of pleading guilty to the charge of abortion rather than being tried on the charge of manslaughter.

NEBRASKA

Society News.—Two meetings of the Fifth Councilor District Medical Society were held in December. At Fremont, December 16, speakers were Drs. Rodney W. Bliss and Joseph A. Weinberg, Omaha, on "Radiosensitivity to Thoracic and Other Tumors" and "Surgical Problems Concerning the Thorax," respectively. At Columbus, December 12, Drs. Charles Fred Ferciot and James E. M. Thomson, Lincoln, spoke on "Diagnosis and Treatment of Injuries to the Knee" and "Fractures of the Forearm," respectively. Mr. M. C. Smith, executive secretary of the Nebraska State Medical Association, addressed both meetings on "Fellowship in the Practice of Medicine."——Drs. George W. Ainlay, Fairbury, and Weaver A. Rush, Beatrice, addressed a joint meeting of the Jefferson and Thayer county medical societies in Hebron, December 13, on diabetes and use of the x-rays in diagnosis of gastro-intestinal diseases, respectively.——Dr. George W. Covey, Lincoln, gave an address on coronary occlusion before the Gage County Medical Society, December 4.

NEW JERSEY

Society News.—Dr. Frank C. Yeomans, New York, addressed the Academy of Medicine of Northern New Jersey, Newark, January 16, on "Ulcerative Colitis, Diverticulitis and Cancer."——Dr. Garfield G. Duncan, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, December 19, on "Diet in the Management of Diabetes and Obesity."——Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will address the Middlesex County Medical Society, January 29, at "The Pines," between New Brunswick and Metuchen.——Dr. Charles Gordon Heyd, New York, addressed the Morris County Medical Society at the state hospital at Greystone Park, December 19, on "Goiter—Diagnosis and Therapeutic Indications."——Dr. Frederic E. Elliott, New York, addressed the Essex County Medical Society, Newark, January 9, on "Current Problems in Medical Economics."——Dr. William Wayne Babcock, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, January 10, on "Advances in Management of Abdominal Malignancy."——Dr. David D. Berlin, Boston, addressed the Bergen County Medical Society, Hackensack, January 14, on "Surgical Treatment of Heart Disease."

NEW YORK

Tenth Anniversary of Medical School.—The tenth anniversary of the opening of the University of Rochester School of Medicine and Dentistry, Strong Memorial Hospital and the School of Nursing was celebrated with a special program, January 9-10. Ten years of medical progress was reviewed in seminar sessions, general scientific meetings and demonstrations of research in progress. Dr. Elliott P. Joslin, Boston, delivered the Eastman Memorial Lecture on the evening of January 10, on "Diabetes of Today and Tomorrow."

New York City

Funds for Hospitals.—The United Hospital Fund raised $1,852,821 in a campaign begun November 18, it was announced at a report meeting January 10. The public phase of the drive ended at that time, but solicitation among industries was to be continued in the hope of reaching the goal of $2,000,000.

Society News.—At a meeting of the National Society for the Advancement of Gastro-Enterology, January 28, speakers will be Drs. James S. McLester, Birmingham, Ala., President of the American Medical Association, on "Deficiency Diseases as We See Them in America"; Charles L. Hartsock, Cleveland, "The Deficiency Factor in the Treatment of Chronic Gastro-Intestinal Diseases," and M. E. Binet, Vichy, France, "Statistical Studies on 3,000 Cases of Chronic Angiocholecystitis."

Silver Anniversary.—The New York League for the Hard of Hearing celebrated the twenty-fifth anniversary of its founding at a "Silver Anniversary Dinner," January 3. Dr. Ebenezer Ross Faulkner was toastmaster and speakers were Dr. Austin A. Hayden, Chicago; Dr. Frederick N. Sperry, New Haven, Conn.; Lewis Wilson, Sc.D.; Ida M. Tarbell; Annetta W. Peck, executive secretary of the league; John L. Elliott, Ph.D., and Mr. Leo Stein, president of the league. The league was founded Jan. 3, 1911, by Edward B. Nitchie, a teacher of lip reading. It has grown from a membership of about sixty to nearly 500.

Medical Service Among Those on Relief.—The medical and nursing service of the Emergency Relief Bureau of New York City arranged medical attention for 169,573 families on home relief in 1935, compared with 30,082 in 1933, according to the annual report of the executive director. Physicians made 422,370 visits and nurses 47,484. The cost of this care was placed at $1,130,271.84. The average cost for each case in 1935 was $6.66. The relief medical service maintains a list of 4,000 physicians, among whom cases are rotated; patients may choose their own physician, provided the number of calls for any one physician does not exceed the average number assigned to others in the vicinity and provided the requested physician is registered with the service. Illnesses treated in the home must be of comparatively short duration. Contagious diseases without complications and maternity cases in which conditions are normal are handled in homes. No form of surgery is performed in the patient's home.

Examination for Health Education Position.—The Municipal Civil Service Commission announces an examination for the position of assistant director of the bureau of health education in the New York City Department of Health. It will be the task of the assistant director to publicize and assist in the development of a public health education program in district health centers and to assist the director in administrative direction of the bureau. Applicants must be graduates of recognized medical schools and must have had at least three years' experience in the planning and execution of a popular health education program and literary or editorial experience. Lacking a medical degree, exceptional experience of five years of the type described will be accepted. The examination is open to all citizens of the United States, but the appointee must thereafter live in New York. The salary is $5,500 a year. It is preferred that candidates be between 30 and 44 years old. Application blanks may be obtained from Room 1400, Municipal Building. Applications will be received until February 11.

OREGON

Society News.—The annual meeting of the Alumni Association of the University of Oregon Medical School will be held at the university, March 2-4, with Dr. Thomas R. Brown, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, as guest speaker. Clinics will be held each morning at the Multnomah County Hospital and lectures presented each afternoon at the Medical-Dental Auditorium.——Dr. John R. Montague addressed the Multnomah County Medical Society, Portland, December 4, on "Metabolic Studies in a Man with a Shortened Intestine." Dr. James Tate Mason, Seattle, President-Elect, American Medical Association, gave an address at the society's annual banquet, Portland, December 18.

PENNSYLVANIA

Society News.—A symposium on peripheral vascular diseases was presented at the December meeting of the Dauphin County Medical Society, Harrisburg, by Drs. Henry R. Douglas Jr., Alfred H. Simmons and John A. Daugherty.

Philadelphia

Society News.—A symposium on medical economics formed the program of the Philadelphia County Medical Society, January 22; speakers were Drs. Rosco G. Leland, Chicago, director, Bureau of Medical Economics, American Medical Association; Francis F. Borzell, Philadelphia, chairman of the committee on medical economics of the state medical society, and Joseph W. Post, chairman of the commission on medical economics of the Philadelphia county society.——Speakers at a meeting of the Philadelphia Academy of Surgery, January 13, were Drs. Gabriel Tucker, on "Gastroscopy as an Aid in

Diagnosis and Foreign Body Removal," and Robert H. Ivy and Lawrence Curtis, "Adamantinoma of the Jaws."——Drs. Samuel Goldberg and Samuel L. Greenfield, among others, addressed the Philadelphia Pediatric Society, January 14, on "Suppurative Arthritis Complicating Meningitis."

SOUTH CAROLINA

Society News.—At the annual New Year's meeting and banquet of the Marlboro County Medical Society, Bennettsville, January 10, speakers were Drs. Edgar A. Hines, Seneca, secretary of the South Carolina Medical Association, on "The New Year and the Doctor"; William R. Barron, Columbia, "Submucous Fibrosis in the Urinary Bladder"; Roy B. McKnight, Charlotte, N. C., "Riedel's Thyroiditis," and, following the banquet, Dr. Warren T. Vaughan, Richmond, Va., "Newer Methods in the Study and Treatment of Food Allergy."

TENNESSEE

Public Health Conference. — The annual conference of public health workers will be held in Nashville, January 30 to February 1. Among physicians who will appear on the program are:

Dr. James P. Leake, U. S. Public Health Service, Washington, D. C., Our Current Knowledge of Poliomyelitis; Futile Gestures versus Sound Procedures in Communicable Disease Control.

Dr. Allen W. Freeman, dean, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Specific Objectives in a Rural Health Program; Accepted Policies in the Administration of a County Health Department.

Dr. Waller S. Leathers, dean, Vanderbilt University School of Medicine, Nashville, Present Trends in Education of Public Health Workers.

Dr. Horton R. Casparis, professor of pediatrics, Vanderbilt, Physical Examination of the Preschool and School Child.

WISCONSIN

Society News.—A symposium on cancer was presented at the meeting of the Milwaukee County Medical Society, January 10; speakers were Drs. Francis B. McMahon, on cancer of the lip and tongue; Maurice J. Reuter, the skin; Marcell E. Gabor, the stomach; Carl Henry Davis, the uterus; Stanley J. Seeger, the colon and rectum; John S. Gordon, the nose and throat; William C. F. Witte, the breast, and Walter M. Kearns, urologic cancers.——Dr. Robert R. Irwin, Wauwatosa, addressed the Fond du Lac County Medical Society, Fond du Lac, December 18, on diseases of the prostate gland.

Veteran Physicians Honored. — Seven Wisconsin physicians who have practiced more than forty years were honored at a banquet at Rice Lake, December 3, by medical and other friends. They were Drs. Clark C. Post, Barron; William G. Malcolm, Chetek; Olaf M. Sattre and Edgar J. Knapp, Rice Lake; Walter A. Hazelton, Hayward; Horace G. Hilliard, Minong, and Harry H. Ainsworth, Birchwood.——Dr. Isaac N. McComb, who has practiced at Brillion more than fifty years, was guest of honor at a dinner given by physicians of Outagamie, Calumet and Manitowoc counties in Manitowoc, December 11. The dinner was arranged by the Calumet County Medical Society.——A dinner was given in honor of Dr. LeRoy Abbott, Wilton, November 23, under the auspices of the Monroe County Medical Society, to observe his completion of fifty years of practice.——Dr. George A. Ritchie, Appleton, was honored at a dinner given by the Outagamie County Medical Society in Appleton, December 12, celebrating his fiftieth anniversary of medical practice.

PUERTO RICO

Annual Medical Meeting and Election. — Dr. Manuel Pavia Fernandez, San Juan, was elected president of the Puerto Rico Medical Association at the annual meeting in San Juan, December 13-15; Dr. Jesus M. Armaiz, Vega Baja, was elected vice president and Dr. Euripides Silva, San Juan, reelected secretary. Dr. James S. McLester, Birmingham, Ala., President, American Medical Association, attended the meeting, giving addresses on the work of the American Medical Association and on "The Borderline States of Nutritional Insufficiencies." Other guests were Drs. Arthur C. Morgan, Philadelphia, who spoke on "Applied Therapeutics," "Acute Tragedies" and "Chest Signs in Pneumonia and in Pulmonary Tuberculosis"; David Seegal, New York, "The Accuracy of Major Clinical Diagnosis as Compared with Autopsy Findings," and J. Raymond Lutz, New York, "Chronic Catarrhal Colitis." Dr. McLester was the guest of honor at a reception at the home of Dr. Esteban Garcia Cabrera, and Dr. Morgan was entertained by the Puerto Rico chapter of the alumni association of the University of Pennsylvania.

GENERAL

Society News.—Dr. Thomas G. Orr, Kansas City, Mo., was elected president of the Western Surgical Association at its recent annual meeting in Rochester, Minn.——The Mid-South Post Graduate Medical Assembly will be held in Memphis, Tenn., February 11-14.——Dr. Harvey B. Stone, Baltimore, was elected president of the Southern Surgical Association at Hot Springs, Va., December 10-12; Drs. Fred W. Rankin, Lexington, Ky., and Edwin P. Lehman, University, Va., were elected vice presidents and Dr. Edward William Alton Ochsner, New Orleans, was reelected secretary. The 1936 meeting will be in Biloxi, Miss.——The annual meeting of the Academy of Physical Medicine will be held in Boston in October. Dr. Franklin P. Lowry, Newton, Mass., was recently elected secretary to fill the unexpired term of the late Dr. Arthur H. Ring, Arlington.——The Tri-State Hospital Assembly will be held at the Hotel Sherman, Chicago, May 6-8. The assembly is composed of the hospital associations of Illinois, Indiana and Wisconsin.——The annual convention of the American Dietetic Association will be held in Boston, October 11-16, at the Statler Hotel.

Annual Report of Commonwealth Fund.—More than two thirds of $1,574,025.07 appropriated by the Commonwealth Fund for the year ended Sept. 30, 1935, was devoted to the promotion of health and medical service, according to the annual report. After several years of intensive development of rural health service in Tennessee, Massachusetts and Mississippi, and isolated activities of a similar sort in Oregon, North Dakota, Georgia, Maine, Kentucky and New Mexico, the conclusion has been reached that to enlarge the size and improve the standards of rural health departments beyond the point which they have generally reached is practicable. The fund believes a rural health department "should be organized on a countywide basis." About 14 per cent of the fund's gifts were in the field of mental hygiene, in this country primarily for the promotion of training for psychiatry and psychiatric social work. At three teaching hospitals provision was made for the addition of psychiatric or psychologic service to children's clinics as a step toward more accurate diagnosis and better treatment of common disorders which arise from emotional as well as physical causes. In England the fund continued to meet most of the costs of a child guidance clinic in London, a training course for mental health workers at the London School of Economics, and a central office for information about child guidance and psychiatric social work. During the year a new general community hospital, the seventh in this group, was opened at Kingsport, Tenn., under the plan by which the fund finances the greater part of the building and equipment costs and the community agrees to maintain a standard hospital, serving patients regardless of status, and doing a certain amount of free work. Plans are now being drawn for another such hospital at Tupelo, Miss., where a local quota of $40,000 has already been raised, and it is expected that the fund will shortly announce the selection of the ninth community to which such aid will be given. In addition, the fund aided medical research and awarded fellowships to worthy students.

Medical Bills in Congress.—*Bills Introduced:* S. 3545, introduced by Senator Capper, Kansas, proposes to provide for the relief of officers and soldiers of the volunteer service of the United States, mustered into service for the war with Spain, who were held in service in the Philippine Islands after the ratification of the treaty of peace, April 11, 1899. S. 3693, introduced by Senator Carey, Wyoming, proposes that for the purpose of promotion there shall be credited to officers of the Medical Corps all active service as officers of the Medical Reserve Corps rendered by them between April 23, 1908, and April 6, 1917. S. 3728, introduced by Senator Black, Alabama, proposes to increase the lump sum payment made under the United States Employees' Compensation Act in cases of death or of permanent total or permanent partial disability suffered prior to Feb. 12, 1927. H. J. Res. 449, introduced by Representative Marcantonio, New York, proposes to authorize the Secretary of Labor to appoint a board "to ascertain the facts relating to health conditions of workers employed in the construction and maintenance of public utilities," with particular reference to the prevalence of silicosis among employees on a tunnel project at Gauley Bridge, West Virginia. H. R. 9937, introduced by Representative Terry, Arkansas, proposes to authorize the President to award the Congressional Medal of Honor to Dr. Samuel G. Boyce, "who, during the World War in action involving actual conflict with the enemy, distinguished himself conspicuously by gallantry and intrepidity, at the risk of his life, above and beyond the call of duty." H. R. 10122, introduced by Representative Cravens, Arkansas, proposes to

amend the Social Security Act so as to increase the sum to be paid by the United States to the aged. H. R. 10124, introduced by Representative Kennedy, New York, proposes to prevent the adulteration, misbranding and false advertising of food, drugs, devices and cosmetics in interstate, foreign and other commerce subject to the jurisdiction of the United States. H. R. 10130, introduced by Representative Taylor, Tennessee, proposes to refund to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection, their widows and dependents, the amounts of which they were deprived by the Economy Act. H. R. 10132, introduced by Representative Thomason, Texas, proposes to authorize the appropriation of one million dollars a year for the United States Public Health Service "to establish public health protection along the international boundary between the United States of America and the Republic of Mexico." H. R. 10270, introduced by Representative Doxey, Mississippi, proposes to provide that the minimum pension rate for totally and permanently disabled World War veterans shall be the same as for the Spanish-American War veterans. H. R. 10322, introduced by Representative Pierce, Oregon, proposes to provide that certain benefits to which veterans of the Spanish-American War are entitled shall be extended to all veterans who served ninety days, in foreign service, under the jurisdiction of the "Quartermaster General, Surgeon General, of the United States Army, the Secretary of the Navy, or Marine Corps, during the Spanish-American War, including the Philippine Insurrection and the Chinese Boxer Rebellion."

FOREIGN

Course by Dr. Portmann.—An intensive five weeks course in otolaryngology will be given by Dr. Georges Portmann, professor of otolaryngology, at the University of Bordeaux, France, beginning July 30. The course, which will include didactic, laboratory, clinical and operative instruction, will be in English. For further information address Dr. James A. Flynn, 1511 Rhode Island Avenue N.W., Washington, D. C.

Commission on Nutrition.—At the September meeting of the Assembly of the League of Nations an expert commission on nutrition was appointed as a result of a three-day discussion of the problem of nutrition in relation to the public health in which Australia's delegates demanded an inquiry to obtain facts on which adequate schemes of nutrition may be based. The commission held its first meeting in London in November with Dr. Edward Mellanby, London, as chairman and Elmer V. McCollum, Sc.D., Baltimore, as vice chairman. Other members present at this meeting included Mary Swartz Rose, Ph.D., New York; Dr. William H. Sebrell Jr., National Institute of Health, Washington, D. C.; Prof. L. Alquier and Dr. L. Lapicque, Paris; Prof. Johan Axel Hojer, Stockholm; Dr. Edward P. Cathcart, Glasgow; Sir John Orr, Aberdeen, and Professor Sbarsky, Moscow. It was decided at this meeting to draft a statement on scientific principles governing the dietaries of certain groups; namely, women during pregnancy and lactation, infants, school children and adolescents up to the age of 21. Two subcommittees were set apart, one on energy-producing substances and the other on non-energy-producing substances.

Personal.—Dr. John Mellanby, professor of physiology in the University of London, has been appointed to the Waynflete chair of physiology at the University of Oxford, to succeed Sir Charles Sherrington. He is a brother of Dr. Edward Mellanby, secretary of the Medical Research Council of Great Britain.——Charles Melville Scott, M.B., lecturer in materia medica at the University of Edinburgh, has been awarded the first David Anderson-Berry prize by the Royal Society of Edinburgh for an essay entitled "On the Action of the X and Gamma Rays on Living Cells." The prize, founded by the late Dr. Anderson-Berry in 1930, is a medal and a sum of money to be awarded triennially to the person who has recently produced the best work on the nature of x-rays in their therapeutic effect on human diseases.——Friends and former students of Prof. Albert Dustin, professor of pathologic anatomy in the University of Brussels, Belgium, arranged a celebration for November 30 in honor of his twenty-fifth anniversary in the professorship. A plaque was to be presented to Professor Dustin, and remaining funds were to be placed at the disposition of the laboratory of pathologic anatomy to be used in research under his direction.——Staff appointments recently announced at the British Postgraduate Medical School at Hammersmith include Drs. Francis R. Fraser as professor of medicine; George Grey Turner, professor of surgery; James Young, professor of obstetrics and gynecology, and Edgar H. Kettle, professor of pathology.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Dec. 21, 1935.

The Aims and Methods of Medical Science

The appointment of Dr. J. A. Ryle to be regius professor of physic in the University of Cambridge, reported in a previous letter, is an important event in English medicine. As physician to Guy's Hospital, a connection which he has had to sever with great regret, he had attained a foremost position as an investigator, a clinician and a teacher. He has become regius professor at a remarkably early age, having qualified as recently as 1913. He has emphasized more than any one at the present day the importance of clinical investigation and of taking a general view of a case, instead of being dominated by the conclusions of specialists. In his inaugural lecture at Cambridge, entitled "The Aims and Methods of Medical Science," he has stated his position. He holds that our system of education has "become too complicated and unwieldy, our instruction too uncorrelated and departmental, too insistent on the acquisition of knowledge without provision for its proper distribution and assimilation. We have allowed the cult of specialism, both in clinical and in laboratory work, to spread unchecked and have lost sight of the need for a central controlling philosophy to hold the reins of the restive younger sciences." Few days go by that Professor Ryle does not behold faulty judgments due to lack of vision or to that inaccurate focusing which is the outcome of too much specialism. He admits that good specialism is essential to scientific progress, but he condemns excessive, premature and misdirected specialisms for the subversive influences which they have had on medical thought, action and education. He quotes from Hughlings Jackson: "There is no harm in studying a special subject; the harm is in doing any kind of work with a narrow aim and a narrow mind." Jackson was pleading for better integration in the sciences as a counterpart to increasing specialism. While specialism in medicine can often deliver new truths or refinements of old truths, it can rarely of itself, in the complex human problems that confront us, give anything like the whole truth about a patient or his disease. Hence the too frequent instances of operations unnecessarily undertaken, of treatments injudiciously selected and forecasts unfairly given not because of the inherent difficulties of medicine, which tax every one, but simply because the nature and meaning of common symptoms have been insufficiently appreciated; because new machines and tests have been allowed to usurp the function of the eye, ear, hand or native wit; because the psychology of a patient has been misread or neglected in the previous estimates, or because the patient has never been viewed as a "whole" man or woman and the disease never studied as a "whole" disease. All too commonly the puzzled practitioner is persuaded into unwise diagnosis or action by a laboratory or radiologic opinion, unjustified because given without reference to or knowledge of the general situation, which includes both organism and environment. In an earlier generation deficiencies in the matter of precise tests and scientific detail were often compensated by close observation and sane logic. The education today leaves little room for the training of reason. It piles up evidence but neglects instruction in its use.

The bacteriologist studies the agents of disease but only occasionally sees the disease in the living or even the defunct patient. Yet he has been willing to prescribe treatment in the shape of a vaccine prepared from a throat swabbing or a fecal specimen, for a patient he has never seen and who has had no precise diagnostic label assigned to him and without any evidence of a causal relation between the organism isolated and

the malady, or evidence that a vaccine can produce the response supposed. Professor Ryle has seen cases in which the blame must be divided between clinician and bacteriologist, of the treatment for long periods by vaccines of gout as rheumatoid arthritis, of phthisis as bronchitis, and of symptoms due to the abuse of purgatives as colitis. Healthy and well directed and correlated specialism is the life breath of science, but the waste of time and money from the drive toward isolated pigeonholed research, by young men whose education has lacked breadth from the beginning and the very nature of whose tasks deprives them of the stimulus they most need, is sad.

Professor Ryle pleads for a closer connection between the clinician and the experimentalist. In the past, one man combined the two functions. This was the situation with Harvey, Jenner and Lister. Sir Thomas Lewis has brought precise experimental methods to the bedside. During the war Professor Ryle investigated spirochetal jaundice (Weil's disease) with a pathologist, the late Adrian Stokes. Day by day Stokes was in his ward and he was in Stoke's laboratory. Stokes saw his patients and he saw Stokes's guinea-pigs. These were inoculated from rats obtained from infected trenches and the same disease was produced as when they were inoculated from soldiers suffering from spirochetal jaundice. Also nonicteric cases were recognized. Such cooperation might be more widely followed.

Professor Ryle asks for the study of symptoms, their nature and their purpose, by more precise methods. Many chronic diseases, such as peptic ulcer, bacilluria and the severe anemias, would not become chronic if the meaning of the subjective phenomena that herald them were more widely appreciated. Symptoms which Dr. John Brown described as "the voice of nature" are still poorly attended to, and the constant search for new objective proofs has encouraged their neglect. The physician, the student of nature, as the name implies, is the man who sees the problems and sees them whole. He is not always the man to separate and solve them in detail, but in a given case or a given disease he alone, by his training, is in a position to assess the contribution of the various factors at work and to indicate where specialist help is likely to prove of value. He must remain something of an anatomist, a physiologist, a pathologist and especially a psychologist, and yet he is none of these or only sufficiently one to give him free access to the minds of the experts in these sciences.

Finally, Professor Ryle asks for a revival of what Gull, a wise physician of the great Guy's school, called "the general view" and avoidance of what he phrased as "too narrow a pathology." In medical science the time for the task of integration, however difficult it may be, is overdue. Relying too much on the test tube or on the contributions of radiology and on instrumental devices, many doctors have lost their own souls (if the soul is compounded of or directed by the senses) and have failed to learn how profitably disease may be studied with eye, ear, hand and nose and the wit that garners essential information from the history, the environment, the relatives or friend. We need again general physicians of the type of Sydenham, Heberden, Bright, Wilks, Osler and Allbutt to partner the able neurologists, cardiologists, pediatricians, psychiatrists and research physicians of the present age.

Treatment of Paralytic Ileus

At the Royal Society of Medicine Mr. Sampson Handley took for the subject of his presidential address to the Section of Surgery a subject which he has made his own—the treatment of paralytic ileus in acute appendicitis. A study of the pathology of peritonitis led him to the conclusion that these frequently fatal cases are amenable to timely and energetic surgical treatment. He did not consider jejunostomy to be the solution. The impression, prevalent in some quarters, that medical treatment abolishes the necessity for surgery in peritonitic ileus he considers wrong. He has been disappointed with Welch's serum. In a recent case at the Middlesex Hospital continuous gastric aspiration with periodic gastric lavage through an indwelling stomach tube proved valuable in maintaining the patient's condition and allowing time for a thorough trial of nonoperative measures. In all the cases of paralytic ileus which he had seen, medical measures were perseveringly tried and operation was resorted to only after these had failed. In all cases too, before the onset of the obstruction, the peritonitis that caused the obstruction had been treated according to the gospel of Murphy—by removal of the appendix, pelvic drainage, the Fowler position and free continuous administration of saline solution by rectum.

PARIS

(From Our Regular Correspondent)

Dec. 13, 1935.

Relation of Blood Sugar to Glycosuria

In the June issue of the *Journal médical français,* Prof. F. Rathery states that the results in general of chemical examination of the blood do not represent accurately the condition of the body tissues. This is especially true of the chloride, ammonia, urea and total nitrogen content of the blood. In two patients with diabetes the same percentage of blood sugar can be accompanied by totally different percentages of sugar in the urine. Again, in the same diabetic patient the hyperglycemia at different hours of the same day and on different days is not at all parallel to the glycosuria. One observes during the course of the same day that sugar in the urine will be found only when the blood sugar is on the decrease, while at a period when the blood sugar is very high there will be no sugar in the urine. The most severe cases of diabetes are not always accompanied by a very high blood sugar. Certain patients have a marked hyperglycemia without coma, and, again, others are comatose with a relatively low hyperglycemia.

Certain patients have a glycosuria with only a slight or no increase in blood sugar. On account of the variations of the normal sugar content of the blood during a period of twenty-four hours a tolerance test of a given diabetic patient for glucides is practically impossible if one depends on the variations of the glycemia under the influence of the glucides.

A hyperglycemia is found in other conditions besides diabetes, either in the form of free sugar or protein sugar ("sucre proteidique") resulting from the union of glucides with certain proteins of the tissues (especially the globulins and albumins). The protein glycemia is markedly high in cases of cancer in which there are multiple metastases and advanced cachexia, also in severe pulmonary tuberculosis, and in influenza with pulmonary complications.

A glycemia should be interpreted differently in a normal person and in a person with diabetes. The latter, in order to metabolize glucides correctly and then lipoids and proteins, appears in certain cases to need a higher blood sugar than a normal individual. To follow with any degree of accuracy such cases of diabetes would necessitate more frequent chemical examinations of the blood than is practicable. Fortunately, this is not essential if one pays close attention to the glycosuria. A certain number of physicians maintain the opposite; viz., that disappearance of sugar in the urine does not suffice and that one must always aim to bring the blood sugar down to normal. This is a great mistake, according to Professor Rathery. The average diabetic patient finds it irksome to follow a diet, especially if it is too strict. Diets that seem ideal from a scientific point of view are not easily applicable in everyday practice. A diet should be easy to follow. Diets that aim to combat acidosis and glycosuria have led to many a rude awakening as to their value. Every diabetic patient should be treated individually, and no hard and fast rules, applicable to all diabetics, should be made.

Other elements than proteins, glucides and lipoids must be considered in a diet. These are vitamins and mineral constituents.

The conclusion is that the percentage of blood sugar has by no means the same importance in the treatment of a diabetic patient as the amount of sugar in the urine.

The importance of the urine examination is confirmed by the following clinical observations:

1. Diabetic patients whose urine is sugar free but who still have a certain degree of hyperglycemia note that such symptoms as asthenia, fatigue, loss of weight, thirst, pruritus and polyuria all disappear.

2. If a diabetic patient takes more sugars (glucides) than his tolerance test shows, a glycosuria will reappear; but this is not true of the blood sugar and hence the latter test is not as delicate a one.

3. If in certain diabetic patients whose urine is sugar free one tries to reduce by a strict diet a blood sugar that remains more or less high, the result is often negative. If one tries to obtain the same effect (reduction of hyperglycemia) with the aid of insulin, more or less serious intolerance symptoms will appear.

4. If in cases of diabetes complicated by pulmonary tuberculosis the administration of insulin is followed by disappearance of sugar and ketones in the urine but the blood sugar remains high, higher doses of insulin to reduce the hyperglycemia will either have no effect at all or will give rise to signs of intolerance.

There are certain indications, however, for a determination of the blood sugar. These are the following:

1. It is indicated at the beginning of the treatment, in order to distinguish a renal diabetes from a true diabetes. Even here, however, the blood sugar percentage does not in itself furnish enough evidence on which to base a prognosis.

2. One ought never to prescribe insulin for a diabetic patient without being sure that a hyperglycemia exists.

3. During a course of insulin treatments, especially if signs of intolerance are present and especially if a diabetic coma exists or there is resistance to insulin, it is essential to be informed as to the percentage of sugar in the blood.

4. In cases of relative insulin resistance, an estimation of the glycemia at different intervals of the day allows one to divide the doses of insulin more efficaciously. Such cases are relatively rare.

Rathery emphasizes the fact that the blood sugar test can no longer be considered indispensable in the treatment of diabetes. On the other hand, the frequent estimation of the glycosuria is the most reliable and indispensable guide to rational therapy.

To attempt by force to reduce a hyperglycemia to normal in a patient whose urine no longer contains sugar is not only useless but often dangerous.

Tuberculous Bacillemia

The question as to whether tuberculous bacillemia is common has been the subject of many investigations. One of the latest of these appears in the October issue of the *Annales de médecine* by Robert Debré, one of the most competent clinicians and bacteriologists here, and Marcel Perrault. Cultures on a modified Loewenstein medium, guinea-pig inoculations and histologic study were employed in the examination of portions of organs from necropsies of six adults who died of pulmonary tuberculosis and of fourteen infants. Of the latter, seven had positive skin reactions with initial tuberculous lesions and three of the remaining seven had been in contact with a tuberculous father or mother, but the other four, although not in contact, had mothers who were tuberculous.

The conclusions of Debré and Perrault are that: 1. Tuberculous bacillemia that takes place in the terminal stages has not been as yet demonstrated. 2. During pulmonary tuberculosis in the adult, even in cases ending fatally, one either does not find any tubercle bacilli at all in the various organs or tissues, or so few are present that they cannot be detected by culture or animal inoculation. Tuberculous bacillemia, if it does exist in such patients, is a rare finding. When positive, it is only transitory and slight.

In infants, migration of tubercle bacilli into the blood stream frequently occurs in pulmonary tuberculosis, but even here it is only transitory and of slight importance. If the infection is a virulent one, the tuberculosis becomes generalized very rapidly. If the infection is less intense, the small number of bacilli circulating in the blood are destroyed in the body.

BERLIN

(From Our Regular Correspondent)

Dec. 2, 1935.

Research on Heredity

During the first period of hereditary research on man, the chief aim was to discover mendelian hereditary characters. There arose as a result an immense literature on familial transmission of some hereditary character or other. Once it had been established that a given character appears, disappears and reappears in accordance with mendelian laws, it came to be regarded as hereditary. All other characters that did not meet this requirement were regarded as "nonhereditary." Further progress was achieved with the beginning of research on twins, by means of which it is possible to measure hereditary influence even though the hereditary processes are complicated and there has been an intimate interaction of hereditary and environmental influences. Many of these researches, however, as Freiherr von Verschuer recently pointed out, are of questionable value because of onesided selection. What is absolutely needed is research on series of families and twins selected at random. Persons with and persons without hereditary defects must be examined under the same conditions, a fixed minimum of examinations being made in all cases. This type of research never deals with individual persons but only with entire families (the four grandparents of an examinee and their offspring). The ultimate aim of a heredobiologic appraisal of this type is: 1. Complete and reliable determination of heredity in man, including complicated cases. 2. Differential diagnosis of hereditary and nonhereditary cases of the same disease. 3. Creation of bases for a general hereditary prognosis. In addition to the special empirical hereditary prognosis in endogenous psychoses already ascertained, a hereditary prognosis in further diseases is needed; likewise, more extensive norms (for example, for consultation on proposed marriages) are needed on which to base expert opinions. 4. Exact determination of the extent of the damage caused by adverse hereditary influences, and the frequency and range of hereditary predispositions; in no other way can conclusions be drawn on which to base answers to questions such as the origin of pathologic hereditary predispositions, and the relations between disease, racial types and miscegenation.

Etiology of Congenital Clubfoot

The question of congenital clubfoot was discussed by Dr. Mau recently before the Hamburg Medical Society. Congenital clubfoot consists of a retarded development of the foot combined with an incomplete evolution of the normal tension processes of the lower extremity. In the grave types the musculature shows an unequal caliber of the several muscle fibers, which can be best explained by an inadequate innervation from the lowest region of the medullary plate (myelodysplastic changes). Likewise the frequent coincidence of clubfoot with spina bifida points to a dependence on disturbances in the development of the lower end of the neural tube.

The observations on the hereditability of congenital clubfoot point to an endogenous causation. Research on family trees has furnished direct proof of hereditary influence in from 15 to 20 per cent of the cases. A study of 4,220 cases shows that the proportion of male and female children with clubfoot is as 2 is to 1. According to Mau, this almost mathematically exact proportion of the sexes, which can be explained only on the basis of the laws of heredity, leaves no room for exogenous theories. A third proof of the endogenous causation of clubfoot is the combination with other hereditary malformations that are known to be based on endogenous damage of the germ cell (cleft palate, luxation of the hip, occurring in from 5 to 10 per cent of the cases of clubfoot). The regional distribution points likewise to an endogenous causation of clubfoot. According to information from China, clubfoot is virtually unknown in that country. All the evidence, therefore, strengthens the view that congenital clubfoot is to be regarded as due to a checked development, inherent in the genes of the germinal plasma, the frequent coincidence with spina bifida and with myelodysplastic muscular changes pointing to connections between clubfoot and developmental disturbances of the lower end of the neural tube.

The occasional occurrence of congenital clubfoot of exogenous origin is not denied, but the number of such cases will not be greater than the extent to which the proportion of cases occurring in males and females deviates from the theoretical proportion of 2:1. This deviation however, as revealed by the statistics of series of cases, does not amount to 0.1 per cent. If one is going to attempt gradually to eradicate the pathologic gene, or hereditary germinal factor, from the population, one would be compelled to sterilize not only all persons presenting this defect but also their phenotypically sound parents and siblings, who must be regarded as latent carriers of the defect. The present legislation does not permit this. The eugenics courts will therefore be compelled for the present to confine their orders for sterilization to those persons with clubfoot in whom hereditary transmission is demonstrable by the familial appearance of the defect. Exemptions from sterilization should be permissible in the case of persons who possess unusual intellectual talent.

Medical Students and Nursing

During the past three semesters at the University of Freiburg more than 150 medical students (male and female) during the vacations and, to a certain extent, also during the semester have entered the Freiburg university clinics and the Baden health centers and nursing homes to serve as nurses or caretakers of the sick. The "Medizinischer Lehrdienst" at the University of Freiburg is an outgrowth of this recent practice. Students who begin their study of medicine at the opening of the winter semester 1935-1936 and who enter this lehrdienst will serve as nurses throughout their first semester. In order that this service may not lengthen their stay at the university, the students who take part in the Medizinischer Lehrdienst remain matriculated at the university. Their work at the university is specially arranged so that they can take their preliminary tests at the regular appointed times. The student-nurses reside in a dormitory under the direction of an older medical student. In the clinics in which they serve, the student-nurses receive free maintenance, which reduces the living expenses of the individual student to a comparatively low level.

The Medizinischer Lehrdienst has come to be regarded as an essential factor in the training of a physician. It is planned to serve at the same time as a means of selecting the most promising students to continue their medical studies, as it is thought that, through observation of students' application in the clinics, unsuitable students can be eliminated during their first semester's study.

Campaign Against Scabies

The federal minister of the interior has issued special orders with a view to eradicating scabies in itinerant persons, in whom almost exclusively, he states, scabies is now found. He has ordered that during the period November 18-25 all homeless itinerants shall be examined for scabies. Persons found to be affected with scabies must be given medical treatment without delay. Their under and outer clothing must be cleansed, and the bedding in the cheap lodging houses and shelters must be fumigated. Persons thus examined and disinfested will, if in a healthy condition, receive a certificate to that effect.

The Berlin Pediatric Society

After pediatrics had for many decades been provided for after a fashion as a section of the Berlin Gesellschaft für Innere Medizin, the Berlin Gesellschaft für Kinderheilkunde has now been created, which puts an end to the tension that has existed for some time. The president of the new society is Professor Bessau, ordinarius at the University of Berlin. While admitting that science is of paramount importance, Bessau warned against exaggeration of the principle that everything must be done to further healthy manifestations and to increase the capacity for performance. For the welfare of the state, the important thing is not only a physically healthy child but also a child that is highly developed psychically; for, in the interrelations of the people as a whole, physical, psychic and mental qualities play an equally important part. It is an interesting fact that this received special emphasis.

ITALY

(From Our Regular Correspondent)

Nov. 15, 1935.

Blood Transfusion in the Army

At the first International Congress on Blood Transfusion, held in Rome, Lieut. Col. Virginio De Bernardinis of the army medical corps presented a communication on blood transfusion, in peace and in war.

Since 1931, all the enlisted men of the sanitary companies have been examined as to the blood group to which they belong, according to the classification of Jansky. The results obtained up to the end of 1934 are shown in the adjacent tabulation.

Year	Number of Men Examined	Results			
		Group I (O)	Group II (A)	Group III (B)	Group IV (A–B)
1931	4,613	2,011	1,786	641	175
1932	5,010	2,421	1,837	585	167
1933	4,238	2,075	1,566	464	133
1934	3,651	1,642	1,447	438	124
Total....	17,512	8,149 (47%)	6,636 (38%)	2,128 (12%)	599 (3%)

Thus there are always available for blood transfusion subjects whose blood group is known, which assumes great importance in time of war. For the military hospitals, in time of peace, it is ordered that all shall be constantly equipped to be able to perform blood transfusion with the greatest rapidity at any time with the aid of any health officer, even in the absence of the surgeon and other specialized personnel. Groups of voluntary donors have been organized, being selected from the sanitary corps and belonging to group I (O), consisting of universal donors. The selection of this type is justified by the peculiar aspects of the conditions existing in the army, where the main indications for blood transfusion are acute anemia of traumatic origin. For interventions of a nonurgent character, a donor of like grouping is to be preferred. To every mobilized sanitary unit will be assigned a group of twenty-five universal donors selected from among the men of the sanitary

corps on leave of absence, who have been subjected to an examination to determine whether they have acquired transmissible diseases since they quit the service. Training of a technical personnel goes hand in hand with the foregoing provisions. The theory of blood groups is taught in the Scuola di sanità militare, and there and in the hospitals practical drills on blood transfusion are given by health officers and by nurses.

Chronic Myositis

At a recent session of the Società Piemontese di chirurgia, Professor Lenormant spoke on chronic myositis due to the staphylococcus. In acute suppurative myositis Pergola discovered this micro-organism in thirty-one patients out of forty-six. The localization of micro-organisms in the muscles is facilitated by repeated slight traumatisms, by excessive fatigue and by undernutrition. In 54 per cent of the cases the myositis attacked several muscles, with a predilection for muscles subjected to the most strain during work. Of 105 muscular abscesses, twenty-seven were of the crural quadriceps, twelve of the pectoralis major, ten of the brachial biceps, and ten of the triceps. The septic types are always fatal.

In studying chronic myositis, the cause must be sought, according to most treatises on the subject, in tuberculosis, syphilis or mycosis (sporomycosis and actinomycosis). In addition to these forms, one must consider also myositis due to pyogenic micro-organisms. Up to the present, the bacteriologic examination has revealed only the staphylococcus, in spite of the fact that in many cases the presence of the gonococcus was justly suspected. Clinically, myositis sclerosa presents itself with the characters of a malignant tumor, without well defined margins, of the nature of an infiltrating growth of hard consistency. The histologic examination does not always constitute a basis for a frank differential diagnosis. The muscle most easily affected is the crural quadriceps.

Biopsy has been proposed for the establishment of a diagnosis but is not accepted by all surgeons, as the incision may provoke ulceration and a rapid growth of the tumor.

Congress of Urology

As all the medical congresses this year, the fourteenth National Congress of Urology was held at Bologna. The main topic was "Frequency of Cancerigenic Degeneration of Prostatic Hypertrophy." Prof. Ermanno Mingazzini said that the material on which the present study was based constituted the experience of forty urologists and comprised about 27,000 cases observed and 11,000 cases coming to operation. The percentage of degenerative adenomas varies, but it is gratifying to know that few investigators have found it as high as Hallé and Alberan, who reported that they found cancer in fourteen out of a hundred cases of simple hypertrophy. According to Gerathy, who studied 450 prostatic cancers, the cancer takes its origin from the true prostate. According to Hallé and Alberan there are two distinct forms of degeneration: an adenoid epithelioma and a circumscribed alveolar form. Suspected symptoms are easy bleeding on passing the sound, and spontaneous radiating pains. Examination of the urine, and all other laboratory examinations, are of little value. Roentgenotherapy is not effective. Even after surgical treatment, recurrences are observed in about 80 per cent of the cases.

Thrombosis

Addressing the Società Piemontese di chirurgia, Naegeli explained new points of view concerning the problem of thrombo-embolism. According to the speaker, thromboses may be divided into local (due to wounds or caustics) and septic conditions. In Germany the apparent increase may be due to the use of intravenous injections, but it may be ascribable to the longer survival of heart patients by reason of the improved methods of treating these patients. The diet is of great importance, for it should be noted that a high content of calcium salts in foods may induce thrombosis. Atmospheric conditions may have an influence in the causation of this lesion—acting on the neurovegetative system in patients with heart changes.

Prof. Mariano Patrizi

The death of Prof. Luigi Mariano Patrizi, director of the institute of physiology at the university at Bologna, is announced. He occupied first the chair of physiology at the University of Sassari, later at the University of Modena and finally at the University of Bologna, where he succeeded Albertoni. His first researches were on memory. Like nearly all the pupils of Mosso, he studied also the physiology of the muscular apparatus, of body temperature, of bilateral and symmetrical voluntary impulses, and of fatigue. Much of his attention was devoted to the registration of vascular, muscular and respiratory reflexes, for which investigation he devised many types of technical apparatus. He studied the influence of music on the circulation of the blood in the human brain and the simultaneity of muscular and mental work. He left some eighty published articles. He was twice awarded the Nobel prize.

RIO DE JANEIRO

(From Our Regular Correspondent)

Dec. 15, 1935.

Research Workers Die of Typhus

Dr. Lemos Monteiro of the Instituto Butantan of São Paulo, a well known scientist, died November 8 in São Paulo of experimental exanthematous typhus. He has done important research on bubonic plague, diphtheria, tetanus, bacteriophage, tuberculosis, the BCG vaccine, filtrable viruses, variola, and yellow fever. Dr. Lemos Monteiro started research work on exanthematous typhus as soon as the disease appeared for the first time in São Paulo, and his studies are considered one of the most valuable contributions on the subject. Dr. Lemos Monteiro shared the fate of his predecessors, Prowazek and Pappenheim, in having died a victim to a rickettsia infection.

Dr. Edison de Andrade, assistant to Dr. Lemos Monteiro, died also during the first week of November, of experimental exanthematous typhus, in São Paulo.

Organic Processes of Endocrine Origin

Dr. Aulo Pinto Viegas published recently an article on the relations between certain organic processes of endocrine cause, such as the basal metabolism, the specific dynamic action of the proteins, the cholesterol and uric acid content of the blood, and the anthropometric measurements. He made determinations of these processes in forty-eight normal adult persons and in seventy adults with various pathologic conditions. The author concludes that the basal metabolism varies inversely with the cholesterol content of the blood. The lower the former the larger the latter, and vice versa. The relation is more constant in pathologic than in normal conditions. The basal metabolism has no relation to the amount of uric acid in the blood. The specific dynamic action of the proteins is not related to the amount of uric acid in the blood of normal persons. In persons with pathologic conditions, however, a slight decrease of the former corresponds to a slight increase of the latter. Both alterations seem to be due to insufficiency of the anterior lobe of the hypophysis, provided other causal factors can be excluded. A lowering of the basal metabolism corresponds to an increase of the specific dynamic action, and vice versa. The inverse relation is more constant in normal than in pathologic cases and points to the different endocrine origin of both processes. These results seem to indicate that the changes of the organic processes of endocrine origin are of value in the determination of the endocrine functions only during the period of body development. When fusion of the

epiphysis, which marks the completion of sexual maturity, has taken place, the processes follow definite curves, which can be modified by further endocrine disturbances only in rare cases. As an illustration one observes that the dimensions of giants exceed those of average persons and that their specific dynamic action is lower than normal, owing to the hypofunction of the anterior lobe of the hypophysis following the hypophyseal hyperfunction in which the abnormal development originated.

Alkali Reserve After Tribrom-Ethanol Anesthesia

Dr. Ovidio Unti lectured recently before the Sociedade de Biologia de São Paulo, discussing the changes in the alkali reserve that occur after the administration of tribrom-ethanol anesthesia. He made determinations in two groups of patients: those in whom an operation was performed and those in whom it was not. The first group included ten patients. Acidosis and acetonuria were present in all cases after the operation. The lowering of the alkali reserve after the operation ranged between 3.8 and 20 per cent in comparison with the figures obtained before it. In one case it was 29.32 per cent lower after the operation. The lowering of the alkali reserve was not related to the duration of the operation. The second group included two patients. The alkali reserve changed in a case from 55.75 per cent to 54.71 per cent after the administration of the anesthesia. In the other case the figure of 59.59 per cent of the alkali reserve did not change. Acetonuria appeared in none of the patients who were given the anesthesia not followed by any operation.

Gold Treatment in Pulmonary Tuberculosis

Dr. José Silveira of the Faculty of Medicine of Bahia recently published an article on the indications for the so-called gold treatment in pulmonary tuberculosis. He said that this treatment is not specific in pulmonary tuberculosis but has precise indications. Its application to all cases of pulmonary tuberculosis may bring discredit to the method and even endanger the life of the patient. A selection of proper cases cannot be made at present, because the results of the treatment depend on several factors, such as the gold compounds used, the technic and, especially, the sensitivity of the pulmonary lesions to gold compounds. The tuberculous lesions that most frequently regress after the gold treatment are those predominantly exudative, recent, small lesions that have a tendency to regression and are in Redeker's second stage of allergy. The indications for the gold treatment in general practice are general and special indications. Cases of noncomplicated pulmonary tuberculosis belong to the first order and those complicated by diabetes, syphilis and pregnancy belong to the second order of indications. The general indications can be for either preliminary (autonomous) or complementary gold treatment. Preliminary gold treatment is indicated in patients with unilateral pulmonary tuberculosis that shows the previously mentioned characteristics of sensitivity to gold compounds. The treatment is given with strict care from the clinical, roentgen and laboratory points of view. The primary gold treatment is indicated also in cases of bilateral pulmonary tuberculosis, when patients cannot receive sanatorium treatment. In noncomplicated forms of pulmonary tuberculosis, satisfactory results are obtained from the administration of gold compounds as complementary to the sanatorium treatment and collapsotherapy, given either in association with or after failure of any of these treatments.

First Brazilian Congress of Cancer

The first Brazilian Cancer Congress took place in Rio de Janeiro in November. The inaugural session was opened by Dr. Maurity Santos, president of the Sociedade de Medicina e Cirurgia of Rio de Janeiro and also the president of the congress. He reviewed the progress made by the national crusades against cancer and the projects to be developed in the near future for the control of cancer. There was a large attendance. During the plenary sessions several members, delegates and other physicians read important articles and discussed the problems related to cancer control.

JAPAN

(From Our Regular Correspondent)

Nov. 23, 1935.

Public Hospitals

A plan to establish 600 hospitals for the public throughout the country at a total estimate of 30,000,000 yen spread over fifteen years has been drawn up by the public health bureau of the home office and will shortly be submitted for approval to its public health investigation committee. With regard to funds, the plan provides that half of the amount shall be provided by the prefectures concerned and half by the state treasury. The projected hospitals will not only give actual medical treatment but will carry out activities along various lines of public hygiene. Through these establishments the people of the provincial districts, who have so far been suffering from lack of medical facilities, will be given these facilities amply and the general health standard will be raised. Also medical practitioners in general thus will be enabled to practice medicine under better circumstances. This plan is believed to have been chiefly made by the necessity for beds with which to combat tuberculosis. In the campaign against tuberculosis, the metropolitan police board has decided, in cooperation with the home ministry, to take more positive steps by establishing a tuberculosis prevention section in the capital. The plan is to establish hospitals in the metropolis to accommodate tuberculosis patients in urgent need of segregation; it also provides for medical treatment free of charge. The number of tuberculosis persons in Tokyo last year reached 140,000, of whom more than 13,500 died during the year. There are at present only eighteen hospitals, including both public and private, with only 2,960 sick beds. Furthermore, Mr. Adachi, now leader of a political party, urged the minister of finance to support a plan to establish a department of health in the cabinet and assist the campaign against tuberculosis. He insists most earnestly on raising the funds for this work by permitting a lottery. The question is How will it effect private practitioners?

Proposed Educational Reform

The intermediate schools, for boys between 12 and 16 years of age, are to have the course reduced from five years to four years by the education office, without any change in the high schools or grade schools. This change has been objected to by the teachers. The National Police Council, which includes almost all the great statesmen, such as the ex-prime minister, is also dealing with the reform in the educational system but is not limiting its attention to the intermediate schools. Various bodies of teachers oppose this plan on the ground that it pays hardly any attention to the physical development of the pupils who attend the intermediate schools. Japanese boys almost cease developing in height at the age of 17, as shown in the table, which was prepared by the physical development research institute. The period during which they attend the intermediate schools is the most important in their physical development, and

Average Growth of Japanese Boys

Age	Growth During One Year, Cm.	Age	Growth During One Year, Cm.
1- 6	6.1	14-15	4.8
6- 9	4.6	15-16	4.8
9-11	3.4	16-17	2.8
11-12	5.2	17-18	0.3
12-13	6.4	18-19	0.2
13-14	5.5	19-20	0.2

in that period of transition the shortening of the course would cause the boys to have an entirely new environment. Over 300,000 boys would be expected to enter high school after finishing the intermediate courses, where their education would be quite different. Other objections also have made the authorities reconsider the change.

Epidemic of Encephalitis

Tokyo and vicinity experienced an outbreak of epidemic encephalitis during the summer. The metropolitan police board reports that from January to July there were only thirteen cases of the disease, but in the latter part of August 813 cases appeared, most of them mild. In September, as it grew cooler after much rain, the number decreased. As for the general symptoms, the onset in some cases was with an acute chill accompanied by a rise of temperature and headache, and in many others with general unrest followed by heaviness in the head, giddiness, and a slight rise of temperature. The temperature in some cases rose to 38 C. (100.4 F.) and in two or three days went up to 39 or 40 C. (102.2 or 104 F.), where it remained for several days with a little rise or fall. A sudden rise to more than 40 C. was seldom observed. The pulse rate generally ranged from 100 to 120. With headache and sleeplessness for a few days, some patients became lethargic and others, having a slight headache and giddiness with vomiting, gradually became drowsy and then lethargic, afterward lapsing into coma. Seldom did drooping of the eyelid or double vision occur. There was a contraction of the pupil and a slight hyperemia of the conjunctiva. All patients had rigidity in the back of the neck. The tendon reflexes were generally normal, with a few exceptions. The Babinski sign was not recognized. A few patients had convulsions. Muscular strength remained. The pressure of the cerebrospinal fluid rarely reached as high as 250, and it was clear or slightly turbid, and seldom bloody. There was a normal cell count. It is reported that from August 21 to September 8 the cases in Tokyo numbered 1,374, with 364 deaths (26.5 per cent). About 60 per cent were patients. Children under 10 years of age numbered 791 (about 60 per cent). Two cases seldom were found in the same family. By the end of September the total number of the patients throughout the country was estimated as over 1,600, but generally the death rate was low.

In the various recent medical meetings reports have been made concerning this epidemic. Dr. T. Mitamura and his associates of the Infectious Disease Research Institute injected glycerinated brain tissue from fatal human cases into twenty-three monkeys, but no signs of the disease were noticed. Brain tissue injections from cases in mice transmitted the disease to monkeys, however. Dr. Yamada of the institute experimented with mosquitoes as the most probable insect vector. Mosquitoes that bit encephalitis patients were kept for a week or a month and then were inoculated into mice as an emulsion. After three days, symptoms of encephalitis developed in the mice.

Prof. Dr. Takeuchi and associates of the Tokyo Imperial University reported that they were successful in isolating a filtrable virus while experimenting on mice. In a medical meeting at Osaka Imperial University, Prof. Dr. T. Taniguchi and his associates read a paper on isolating a filtrable virus. The Japan Science Promotion Association has a section on encephalitis research, and its meeting was held November 15 in the Imperial Academy in Tokyo. All the authorities on this disease were present, and each made a report. Dr. R. Inada, the chairman, said that the filtrable virus reported by the ten members on this occasion would sooner or later be proved to be the cause of the encephalitis that ravages this country in summer. Some are of the opinion that Japanese encephalitis is different from that seen in St. Louis and should be called "summer encephalitis." A satisfactory report on neutralization experiments has not yet been presented by any investigator.

Marriages

WILLIAM RUSSELL DAVIS, Ancon, Canal Zone, to Mrs. Mary Hamilton Bunn of Cedartown, Ga., in December 1935.

CLYDE FINDLEY BOWIE, Atlanta, Ga., to Miss Bessie M. Crary of Marianna, Fla., in Heflin, Ala., Nov. 23, 1935.

OREN DOUGLAS BOYCE, Charlotte, N. C., to Miss Virginia Wilkes in Charleston, S. C., Sept. 16, 1935.

JOHN EDWIN BROWN JR., Columbus, Ohio, to Miss Rosamond Lawson Foote at Baltimore, Dec. 28, 1935.

HAROLD THERON DONAHUE, Cass City, Mich., to Miss Alice Shirley Fromm of Detroit, Dec. 21, 1935.

MARSHALL KINNE BARTLETT, Boston, to Miss Barbara Frazer Hume of Muskegon, Mich., Dec. 21, 1935.

WILLIAM A. BORIN, Bartonville, Ill., to Miss Lulu Margaret Dustey of Peoria, Nov. 21, 1935.

VANCE LA MAR BAKER to Miss Louise Ashworth, both of Milwaukee, Nov. 7, 1935.

HAROLD M. BLOCK, Dallas, Texas, to Miss Jane Landau, January 3.

Deaths

Walter Gelvin Bain ⊕ Springfield, Ill.; Northwestern University Medical School, Chicago, 1905; past president of the Sangamon County Medical Society; member of the Society of American Bacteriologists, American Society of Clinical Pathologists and the Radiological Society of North America; past president of the Illinois State Academy of Science; was bacteriologist in charge of the laboratory of the Illinois Board of Health, 1908-1909; served during the World War; aged 59; director of the school for laboratory technicians, medical superintendent, pathologist and radiologist to St. John's Hospital, where he died, Dec. 25, 1935, of cholelithiasis and acute pancreatitis.

James Henry McDuffie Sr., Columbus, Ga.; University of Maryland School of Medicine, Baltimore, 1887; member of the Medical Association of Georgia; past president of the Muscogee County Medical Society, and the Chattahoochee Valley Medical Association; formerly vice president and for many years member of the state board of health; on the staff of the Columbus City Hospital; aged 75; died, Nov. 16, 1935, of lobar pneumonia.

Franklin Pierce Capron ⊕ Providence, R. I.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; member of the American Academy of Ophthalmology and Oto-Laryngology, American Otological Society and the New England Ophthalmological Society; on the consulting staff of the Rhode Island Hospital; aged 83; died, Dec. 16, 1935, of aortic aneurysm and intestinal obstruction.

Frank Eugene Russell, Yorktown Heights, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878; past president of the Medical Society of the County of Westchester; for many years county coroner; formerly member of the board of education; aged 78; died, Nov. 20, 1935, of chronic myocarditis and arteriosclerosis.

Pierre Francis Higgins, Fort Worth, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1910; member of the State Medical Association of Texas; served during the World War; aged 47; died, Oct. 9, 1935, of malignancy of the left testicle, with metastases to abdomen and liver.

Robert M. McMillen, Wheeling, W. Va.; College of Physicians and Surgeons, Baltimore, 1887; Bellevue Hospital Medical College, New York, 1889; member of the West Virginia State Medical Association; past president of the Ohio County Medical Society; aged 73; died, Nov. 29, 1935, of cerebral edema.

Charles David Steinwinder ⊕ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1919; fellow of the American College of Physicians; aged 45; member of the staff and chief of cardiac clinic, Santa Rosa Hospital, where he died, Nov. 25, 1935, of uremia, acute nephritis and intestinal obstruction.

Frederick John Combe, San Antonio, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1889; formerly mayor of Brownsville; served during the Spanish-

American and World wars; aged 68; died, Nov. 26, 1935, in the Medical and Surgical Hospital, of pyonephrosis and chronic nephritis.

Harry **Nelson Lutman,** Versailles, Mo.; Barnes Medical College, St. Louis, 1899; member of the Missouri State Medical Association; postmaster of Versailles; formerly secretary of the Morgan County Medical Society; served during the World War; aged 64; died, Nov. 26, 1935, of cerebral hemorrhage.

Charles Glenn Church ⊕ Van Wert, Ohio; Northwestern University Medical School, Chicago, 1899; past president and secretary of the Van Wert County Medical Society; served during the World War; on the staff of the Van Wert County Hospital; aged 62; died, Dec. 10, 1935, of coronary sclerosis.

William Dougal MacMillan, Vista, N. C.; University of Maryland School of Medicine, Baltimore, 1869; member of the Medical Society of the State of North Carolina; Confederate veteran; aged 91; died, Nov. 12, 1935, in Wilmington, of arteriosclerosis and angina pectoris.

Walter Israel Ducie, Galveston, Texas; Texas Medical College and Hospital, Galveston, 1881; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882; aged 76; died, Nov. 29, 1935, of arteriosclerosis and chronic nephritis.

Edward Everett Goodwin, Brockton, Mass.; Boston University School of Medicine, 1899; member of the Massachusetts Medical Society; aged 71; died, Nov. 6, 1935, in the Emerson Hospital, Boston, of hypertensive heart disease and coronary thrombosis.

Mack Clelland Canan, Madison, Wis.; University of Illinois College of Medicine, Chicago, 1927; member of the State Medical Society of Wisconsin; on the staff of St. Mary's Hospital; aged 35; died, Dec. 10, 1935, of uremia and secondary anemia.

Thomas Richard Morgan, Windgap, Pa.; University of Oklahoma School of Medicine, Oklahoma City, 1928; member of the Medical Society of the State of Pennsylvania; aged 37; died, recently, in the Easton (Pa.) Hospital, of spinal meningitis.

Carm Y. Detar ⊕ Oil City, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1892; past president of the Venango County Medical Society; on the staff of the Oil City General Hospital; aged 65; died, Nov. 28, 1935, of dilatation of the heart.

Henry Harrison Hibsman, Washington, D. C.; Temple University School of Medicine, Philadelphia, 1917; medical examiner of the Veterans' Administration; served during the World War; aged 48; died, Nov. 18, 1935, of angina pectoris.

Wallace Bower ⊕ Brooklyn; University of Pennsylvania School of Medicine, Philadelphia, 1920; aged 41; on the staffs of the Brooklyn Hospital and the Methodist Episcopal Hospital, where he died, Dec. 24, 1935, of injuries received in a fall.

James Arthur Booth, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882; member of the American Neurological Association; aged 79; died, Dec. 22, 1935, in St. Luke's Hospital.

Zina Pitcher, Elyria, Ohio; Michigan College of Medicine, Detroit, 1883; member of the Ohio State Medical Association; aged 75; on the staff of the Elyria Memorial Hospital, where he died, Nov. 13, 1935, of cerebral hemorrhage.

William Elmer Ritter, West Graham, Va.; Jefferson Medical College of Philadelphia, 1885; member of the Medical Society of Virginia; aged 72; died, Nov. 11, 1935, in St. Luke's Hospital, Bluefield, of cerebral hemorrhage.

William T. Flynn, Everett, Wash.; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1905; aged 55; died, Oct. 22, 1935, in the Providence Hospital, of uremia and nephritis.

Charles Sumner Cahill, Cambridge, Mass.; Harvard University Medical School, Boston, 1886; member of the Massachusetts Medical Society; aged 71; died, Dec. 10, 1935, of angina pectoris and chronic myocarditis.

George Saunders, Hibbing, Minn.; University of Vermont College of Medicine, Burlington, 1891; aged 73; died, Nov. 26, 1935, in the Rood Hospital, of carcinoma of the right lung and epithelioma of the right ear.

Phineas B. Carter, Macy, Ind.; Illinois Medical College, Chicago, 1905; member of the Indiana State Medical Association; aged 60; died, Nov. 18, 1935, of prostatic obstruction, nephritis and embolism.

George M. Whitley, Honey Grove, Texas; Atlanta (Ga.) Medical College, 1891; for many years city health officer and surgeon to the fire department; aged 67; died, Oct. 21, 1935, of cardiovascular disease.

Loetta Beamer Bowles, Detroit; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 54; died, Nov. 20, 1935, in the Grace Hospital, of pneumonia.

William N. Alderman, Athens, Ohio; Bellevue Hospital Medical College, New York, 1878; formerly member of the city board of education; for many years bank president; aged 81; died, Dec. 2, 1935.

William Robert Lovett, Sylvania, Ga.; University of Georgia Medical Department, Augusta, 1887; member of the Medical Association of Georgia; aged 73; died, Nov. 11, 1935, of heart disease.

Edward Wilson Feldhoff ⊕ Allentown, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; fellow of the American College of Surgeons; aged 59; died, Nov. 10, 1935.

William Edward Campbell, Ennis, Texas; Hospital College of Medicine, Louisville, 1905; member of the State Medical Association of Texas; aged 58; died, Nov. 16, 1935, of chronic myocarditis.

Maurice Buford Bonta ⊕ Los Angeles; Johns Hopkins University School of Medicine, Baltimore, 1904; formerly on the staff of the Mayo Clinic, Rochester, Minn.; aged 60; died, January 4.

Iverson Clark Case, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1917; served during the World War; aged 51; died, Nov. 25, 1935, of cerebral hemorrhage and nephritis.

Odilon Joseph Comtois, Holyoke, Mass.; School of Medicine and Surgery of Montreal, Que., Canada, 1884; aged 76; died, Nov. 14, 1935, of mitral stenosis and arteriosclerosis.

Alexander Blanchette, Haverhill, Mass.; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1892; aged 65; died, Nov. 13, 1935, of suffocation due to a fire.

James William Du Val, Wichita Falls, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1905; aged 67; died, Nov. 15, 1935, of coronary heart disease.

Gurney Monroe Schminky, Harrisburg, Pa.; Jefferson Medical College of Philadelphia, 1884; aged 72; died, Nov. 8, 1935, in Shamokin, of acute dilatation of the heart.

John Levi Roland, Obion, Tenn. (licensed in Tennessee in 1911); aged 49; was killed, Nov. 5, 1935, when the automobile in which he was driving was struck by a train.

Howard Isaac Post, Detroit; Detroit College of Medicine, 1890; veteran of the Spanish-American and World wars; aged 68; died, Nov. 14, 1935, of chronic myocarditis.

William John McRoberts, Hot Springs, S. D.; Beaumont Hospital Medical College, St. Louis, 1900; aged 76; died, Nov. 16, 1935, in Hurley, N. M., of heart disease.

George Walter Gaillard, Perdue Hill, Ala.; Louisville (Ky.) Medical College, 1882; aged 78; died, Nov. 15, 1935, of bronchopneumonia and cerebral hemorrhage.

Ashbel Newell Hoskins, Hubbardsville, N. Y.; University of the City of New York Medical Department, 1886; aged 85; died, Nov. 2, 1935, of cerebral hemorrhage.

Robert Bentley Ray, West Concord, Minn.; Harvard University Medical School, Boston, 1899; aged 68; died, Nov. 11, 1935, in Rochester, of coronary sclerosis.

William Wade Morton, Bluefield, W. Va.; University of Louisville (Ky.) Medical Department, 1890; aged 82; died, Dec. 5, 1935, of cerebral hemorrhage.

Ira L. Blanton, MacClenny, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1910; aged 49; died, Nov. 6, 1935, of uremia.

Charles Aldin Cole, Winnie, Texas; St. Joseph (Mo.) Hospital Medical College, 1881; aged 81; died, Oct. 14, 1935, of cerebral hemorrhage.

Albert H. Coble, Frankfort, Ind.; Rush Medical College, Chicago, 1883; aged 80; died, Nov. 8, 1935, of lobar pneumonia and prostatic disease.

Henry Eckert Morret, Wernersville, Pa.; Jefferson Medical College of Philadelphia, 1903; aged 54; died, Nov. 21, 1935, of heart disease.

Emery E. Colby, Woodston, Kan.; Kansas City (Mo.) Medical College, 1901; aged 62; died, Nov. 25, 1935, of chronic nephritis.

Herman Henry Blankmeyer, Aransas Pass, Texas; Eclectic Medical Institute, Cincinnati, 1888; aged 72; died, Nov. 11, 1935.

Richard L. King, Hulett, Ga.; Southern Medical College, Atlanta, 1894; aged 65; died, Oct. 26, 1935.

Correspondence

TUBERCULOUS CHANCRE

To the Editor:—In the article entitled Tuberculous Lymphadenitis (THE JOURNAL, Dec. 7, 1935, p. 1839) B. N. Carter and Jacob Smith call attention to a relatively rare form of post-traumatic skin tuberculosis, with accompanying marked regional or satellite lymphadenitis. This form of tuberculosis, although infrequent, is well known to those dermatologists who have carefully studied the various and protean tuberculoderms (Volk, R.: Primary Complex, in Tuberculose der Haut, in Jadassohn's Handbuch, Berlin, Julius Springer **10**:191, 1931). It seems that Carter and Smith, as well as American authors in general, have not sufficiently stressed the significance and the exact genesis of these primary manifestations and have failed to call attention to the pertinent literature. Most, if not all, of Carter and Smith's cases are certainly primary tuberculous complexes of the skin and regional glands. These cases demonstrate what occurs when the first inoculation with tubercle bacilli takes place in the skin and not as is usual in the lungs or gastro-intestinal tract. What Carter and Smith have observed is in reality a dermatologic Ghon tubercle, a primary skin complex identical with the primary internal complex described by Ghon, Ranke and others. This skin manifestation is of course of extreme interest, as it affords an opportunity to study an easily accessible primary tuberculous focus in human beings. Cases have been described and this phenomenon has been very well discussed, for instance by Bruusgaard (Der primäre Komplex an der Haut, *Arch. f. Dermat. u. Syph.* **152**:465 [Dec.] 1926), and even as early as 1911 by Boeck (*Jahresb. d. Kinderh.* **75**:105, 1912). The first exact reference to "chancriform tuberculosis" that I have found in the American literature is that of Brunauer and Sobel (*Urol. & Cutan. Rev.* **34**:763 [Nov.] 1930) and even these authors did not seem to realize that they were dealing with what was in all probability a primary complex of the skin. I have myself at various dermatologic meetings in the United States presented three cases of primary skin tuberculosis of this type. H. E. Michelson (*Arch. Dermat. & Syph.* **32**:589 [Oct.] 1935) has presented the first correct and complete discussion of this subject in an American journal. It is of course rare that the tubercle bacillus enters the skin first and creates its first lesion in that organ. When this is the case it must obviously be preponderantly in children and in children exposed to adults with open tuberculosis (kissing!). The skin lesion then produced is usually insignificant, is often on the face, is almost always a small hard ulcer following a scratch or other trauma, and is accompanied by a marked and overshadowing regional, indolent and hard lymphadenitis. The picture is so similar to that of a syphilitic chancre that the uninitiated almost always make the clinical diagnosis of primary syphilis. Because of its resemblance to syphilitic chancre, the name often used for this type of tuberculosis is chancriform tuberculosis, or tuberculous chancre. The described primary tuberculous skin infection has taken place in a skin with unaltered immunologic reaction, that is, in a child (very rarely in an adult) with a negative tuberculin reaction. Almost all other forms of skin inoculation tuberculosis (another exception is the ulcerative tuberculosis of the new-born, such as seen after ritual circumcision) are second infections, superinfections of the skin in an individual with a previous tuberculous infection elsewhere and with an already altered skin reaction to tuberculin. Examples of these secondary skin inoculations or superinfections (exogenous, lymphogenous or hematogenous) are many. Tuberculosis verrucosa cutis, tuberculosis colliquativa or lupus vulgaris are the common consequences of such skin superinfections in individuals who have, or have had, tuberculosis elsewhere.

The following case of primary skin tuberculosis which came under my observation is perhaps unique in the fact that the child was proved to have a negative tuberculin reaction and a negative chest plate before the skin inoculation with tubercle bacilli took place:

A girl, aged 4 years, coming of a tuberculous family, had a cough and was examined by the family physician. The Pirquet test and Mantoux test were negative, the chest plate showed no indication of tuberculous infection, and the cough subsided in a short while. About four months later a small chancre appeared on the right cheek, with very marked indolent satellite lymphadenopathy. The physician's diagnosis of syphilis could not be confirmed in any way. (Repeated darkfields and blood Wassermann tests on the child and on the parents were all negative). The physician then brought the child to me. By this time the adenopathy had to some extent regressed and a small lupus nodule had appeared at the site of the healing ulcer on the cheek. An uncle who had visited and kissed the child was found to have an open tuberculosis. The Mantoux reaction was now strongly positive (0.1 cc. of a 1:1,000,000 concentration of Koch's old tuberculin), while the lung roentgenogram and all other signs were still completely negative. In this case it was proved that the skin primary complex had brought about the skin hypersensitivity and that the skin allergy had presumably led to the formation of the lupus nodule at the site of inoculation.

It has seemed to me worth while to mention the practical side of primary skin tuberculosis, namely, the possible confusion of tuberculous chancre and adenopathy with syphilitic chancre and adenopathy, and furthermore to direct attention to the interesting immunologic and general lessons that may be learned from the comparison of primary and secondary inoculation skin tuberculosis and from study of the picture and course of the primary tuberculous complex of the human skin.

MARION B. SULZBERGER, M.D., New York.

PAROXYSMAL VENTRICULAR FIBRILLATION

To the Editor:—In THE JOURNAL, Dec. 21, 1935, page 2054, a case of "paroxysmal ventricular fibrillation" associated with complete heart block is reported by W. Lawrence Kahall. Dr. Kahall states that epinephrine was beneficial in the prevention of syncopal attacks due to ventricular fibrillation and concludes that this drug is indicated in this condition. In support of his conclusions he refers to the literature, stating that "other observers have been successful in controlling paroxysms of ventricular fibrillation by intramuscular injections of epinephrine." This statement would lead the reader to believe that there is evidence from the literature that epinephrine is effective in the prevention of ventricular fibrillation. It is to be noted, however, that the references cited by Dr. Kahall do not deal with epinephrine in ventricular fibrillation but are published under the title "Epinephrine in Stokes-Adams Syndrome." It is true that recent reports have indicated that ventricular fibrillation is occasionally the cause of the syncopal seizure in heart block. It should be emphasized, however, that ventricular standstill is the more frequent mechanism and it is apparent on reading the reports referred to by Dr. Kahall that these deal with the action of epinephrine in the prevention of ventricular standstill rather than ventricular fibrillation.

The favorable effect of epinephrine in the prevention of ventricular standstill has been frequently reported and has been clearly demonstrated in an article which I have published (*Arch. Int. Med.* **54**:111 [July] 1934). As to ventricular fibrillation, there is considerable evidence that epinephrine is the most potent factor in its induction and that the administration of this drug is decidedly dangerous in patients who are susceptible to this serious arrhythmia. Schwartz and Jezer

(*Am. Heart J.* **5**:652 [June] 1932) showed that epinephrine induced transient ventricular fibrillation in patients in whom syncopal attacks were due to ventricular fibrillation and emphasized the danger of this drug in such patients. I have (*Proc. Soc. Exper. Biol. & Med.* **32**:1297 [May] 1935) demonstrated that epinephrine intravenously consistently induced rapid ectopic beats from multiple ventricular foci. Such ectopic beats are the frequent precursor of ventricular fibrillation and were present in the case reported by Kahall. Levy and Lewis (*Heart* **3**:99, 1911) induced ventricular fibrillation by the injection of epinephrine in cats under light chloroform anesthesia. Nahum and Hoff (*J. Pharmacol. & Exper. Therap.* **50**:336 [March] 1934) and Hoff and Nahum (*Am. J. Physiol.* **110**:675 [Jan.] 1935) showed that the removal of the adrenals from the body enormously decreased the susceptibility of the heart to experimental ventricular fibrillation. These investigators concluded that epinephrine acts synergistically with some other factor to increase ventricular rhythmicity leading to ventricular fibrillation.

It is my purpose in this communication to emphasize that the preponderance of evidence favors the view that epinephrine disposes the ventricles to fibrillation and to caution against the use of this drug in patients who are susceptible to this arrhythmia.

M. H. NATHANSON, M.D., Minneapolis.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

INFECTIOUS MONONUCLEOSIS

To the Editor:—1. How long after the clinical signs of acute infectious mononucleosis have subsided (from one to three weeks) may the leukocyte count and the differential count be expected to return to normal? Have subacute or chronic variations of this disease ever been reported? 2. How high may postcibal and fasting blood sugars reach during pregnancy before one must of necessity make a diagnosis of diabetes mellitus? To be more specific: Under such circumstances can a fasting sugar of 133 mg. and a reading of 164 mg. two hours after eating be physiologic? Can the proportions of dextrose and lactose in the urine and blood of such a patient be evaluated by any available tests? If so, by what tests? Please omit name and address.

M.D., Massachusetts.

ANSWER.—1. The important clinical signs of infectious mononucleosis are (1) lymph node enlargement, (2) fever lasting an average of ten days but in some cases continuing for several weeks, (3) throat infection, and (4) enlarged spleen. The diagnostic blood signs are an initial leukopenia in 20 per cent of the cases and a leukocytosis of from 10,000 to 32,000 in 80 per cent of all cases. The initial leukopenia is due to a drop in the granulocytes. The leukocytosis is characterized by an increase of lymphocytes, many of which are atypical but not immature. There are usually 50 per cent or more of lymphocytes. This lymphocytosis may continue for months after recovery from the acute illness. The lymph node and splenic enlargement may also persist for months after the patient's recovery.

There are various clinical types of infectious mononucleosis, such as (1) the acute form with high temperature, (2) faucial, (3) abdominal, and (4) insidious. The insidious type may be almost afebrile, with a well marked lymph node enlargement. The prognosis of this disease is good, but it is never possible to state the length of the illness or convalescence. Sometimes recovery is complete in a few weeks, whereas in other cases lassitude, weakness and debility may persist for months. There are therefore acute, subacute and chronic forms of this disease.

2. When sugar is found in the urine of a pregnant woman one must differentiate between benign pregnancy glycosuria, which is common, and true diabetes, which is rather rare. The use of insulin, which enables young adults to survive, may make pregnancy in diabetes more frequent.

In benign pregnancy glycosuria there is no history of diabetes previous to the pregnancy, and usually no thirst or polyuria. There is no ketonuria, as shown by the nitroprusside and ferric chloride tests. A morning specimen of urine rarely shows sugar unless it is highly concentrated, with a specific gravity over 1.025. In the afternoon following meals the urine may show from 1 to 2 per cent sugar. The sugar in the blood collected before breakfast is usually within normal limits (from 80 to 120 mg. per hundred cubic centimeters of blood). Two hours after a rich carbohydrate meal the blood sugar will be below 150 mg. A fasting blood sugar of 133 mg. and a two hour blood sugar of 164 are above normal.

Pregnancy seems to lower the kidney threshold for dextrose, causing it to pass more readily into the urine. Benign glycosuria is usually first seen after the second month of pregnancy and persists until a few weeks before childbirth. Such a person may continue on a normal diet.

Lactosuria may develop toward the end of pregnancy but usually occurs a few days after delivery or during lactation. It is more marked if the breast is not properly emptied.

Dextrose and lactose may occur together. If dextrosazone crystals are secured by the phenylhydrazine test, together with a positive lactose test, the quantity of dextrose present may be determined by quantitative sugar estimations before and after fermentation with yeast or Bacillus parathyphosus B. The difference is due to dextrose.

The test for lactose is made as follows: Dilute the urine until it contains less than 1 per cent of sugar, as indicated by a 1 + or 2 + reduction of Benedict's reagent. Mix 3 cc. of urine, 2 cc. of chemically pure ammonium hydroxide, and three drops of 10 per cent sodium hydroxide. Heat in a beaker of boiling water and observe after two to five minutes' heating. A distinct reddish color is positive. Other sugars give a yellowish color.

HYPERADRENALISM AND DENERVATION OF ADRENALS

To the Editor:—I often observe in my practice cases exhibiting the so-called hyperadrenalism syndrome—the type of patient tending to have a mild or moderate hypertension without organic basis, an irritable temperament, excessive perspiration, and an unstable circulatory system readily provoked by aggravation or exertion into a tachycardia with a feeling of palpitation and vague cardiac oppression. Some of these patients have actually compared their reactions under provocation to their behavior when a small amount of epinephrine is injected by the dentist. 1. What is the latest accepted treatment of hyperadrenalism of the idiopathic type? 2. Is there a reliable depressant of the sympathetic nervous system? 3. What is the status of denervation of the adrenals or adrenalectomy as recently suggested by Dr. George W. Crile of the Cleveland Clinic? 4. What about irradiation of the adrenals with a view to depressing their function more or less permanently? 5. Are there any newly discovered drugs that are specific depressants of the sympathetics? 6. Please outline in full the latest knowledge relative to the foregoing.

M.D., Ohio.

ANSWER.—1. There seems to be no evidence that such a syndrome as idiopathic hyperadrenalism actually exists. An increase in the amount of epinephrine has not been demonstrated in these cases, although many investigators have attempted to do so, using sensitive methods. Perhaps hyperadrenalinism actually does occur in the presence of adrenal tumor. It is impossible to describe a specific treatment. One may advise, however, the avoidance of overexcitement and fatigue, daily rest at noon, and a moderate regimen of living.

2. For the depression of the sympathetic nervous system ergotamine or ergotoxin of suitable dosage may be tried, although their value is not well established. Pentobarbital sodium and amytal as sedatives are of course used, but the possibility of establishing habitual use must be considered.

3. Surgical operations on the adrenal glands are not yet considered in any way established as useful methods. Surgical indications are not well outlined and many surgeons unqualifiedly condemn this procedure.

4. There is no good evidence that use of the x-rays on the adrenal glands is useful. It is, of course, quite possible to do a considerable amount of harm by overexposure of the adrenal to x-rays.

5. We do not know of any specific depressants of the sympathetic nervous system, as already mentioned.

DERMATOSES IN WOOD PAPER INDUSTRY

To the Editor:—I am having a number of cases of an apparent dermatitis in workers in the mills that make Kraft paper. These men from time to time get liquids on them of an alkali nature, such as sodium or potassium hydroxide, and so far as the chemist in charge of operations can tell these are the only known irritants. In one case the condition resembles an ivy poison and covers a greater part of the body but more particularly that part that is likely to be exposed to alkali—always worse in hot weather.

BRAXTON V. POWELL, M.D., Camden, Ark.

ANSWER.—This note contains no special interrogation, which fact provides opportunity for brief general discussion of possible causes of dermatoses in the wood paper industry. Mechanical irritation from wood bark, shreds and dust may lead to a

dermatitis. After shredding, the wood fiber may be treated with caustic soda, sodium sulfate, or calcium bisulfite. Any one of these substances brought in contact with the skin may induce a dermatitis. The waste liquor in this treatment process may contain methyl alcohol, turpentine and tannic or other substances. In the further preparation of the pulp, bleaching is carried out, which commonly is accomplished by one of three different processes; namely, chlorine, chlorinated lime, or the electrochemical method. Any one of these processes might prove to be the source of a dermatitis, or "chlor-acne." Later in the preparation of the pulp, loading materials may be added, including clay, calcium sulfate, rosin, gelatin and talc. Certain of these loading materials may be regarded with suspicion as possible sources of skin disorders. Commonly used sizing materials are rosin soap, alum, aluminum sulfate, starch, gelatin, and sodium silicate. Sizing materials have produced dermatitis on occasion. The making of colored papers calls for the use of dyes. Under the conditions of application, these dyes may almost entirely be exculpated as sources of dermatoses. Among other dyes employed are chrome yellow, ultramarine blue, indanthrene blue, methyl and ethyl violets, blues, greens and reds. Somewhat rarely, finely divided powdered colored glass is introduced into paper. Parchment paper is commonly treated with sulfuric acid. Heavy waterproof papers are usually impregnated with pitch, rosin, paraffin and vegetable or mineral oils. All in all, a wide variety of chemicals used in paper may be labeled potential sources of skin disease. The situation is complicated by high temperatures and high humidities attending paper manufacture. Heat alone, persisting through long hours of work, may lead to a condition of the skin most favorable to the harmful action of trivial skin irritants. In the paper mills of Japan, a form of dermatitis termed locally "tako" has been traced to the action of a blastomycete. This condition is almost entirely limited to the summer months and is confined to the interdigital spaces. More extensive information may be found in the International Labor Office's "Occupation and Health," volume 2, page 549, in the section on "Paper Mills." There is also material of value in an article by G. F. Pedley, "The Hygiene of the Pulp and Paper Industry," in the *Journal of Industrial Hygiene* **6**:28 (May), 70 (June) 1924.

SYPHILIS IN A CHILD

To the Editor:—Recently a boy, aged 2 years, was brought to me with the following history: The birth weight was 6 pounds 7 ounces (2,920 Gm.). He was a premature child (seven and one half months). At birth there were vesicles on the palms of the hands and the plantar surfaces of the feet. He was apparently normal in other respects. He soon developed "snuffles" and was very susceptible to infections of the upper respiratory tract. He gained in weight for a time. This gain was followed by a loss or the weight remained at a standstill. He has always suffered from constipation. Dentition was delayed, the first teeth appearing at 10 months. He was a difficult feeder and always a mouth breather. At present he talks some but does not walk. There are very prominent frontal bosses. He is potbellied. Breathing is stertorous. The complexion is pallid. The weight is 23 pounds (10 Kg.). Blood was drawn and the Wassermann reaction was four plus, with a negative Kahn reaction. What type of treatment would you advise and what prognosis may one give? M.D., Ohio.

ANSWER.—Although the group of symptoms presented by this baby is suggestive of syphilis, it would seem advisable, since the Wassermann reaction was 4 plus and the Kahn negative, to have further serologic tests made before starting treatment. At the same time it would be advisable to examine specimens of blood from the mother, father, and the other children in the family. Positive clinical or serologic evidence in the parents or in the other children and a positive Wassermann reaction in the patient would be sufficient to warrant instituting treatment.

For a child 2 years of age, treatment with bismuth arsphenamine sulphonate has been favorably reported. One-tenth gram every five days for a series of eight injections usually constitutes a course. In a child of this age it would probably be advisable to start out with the idea of giving seven or eight such courses with an interval of two months between the courses. If the bismuth arsphenamine sulfonate given intramuscularly is not well tolerated in this dosage, neoarsphenamine and mercury rubs might be used; as a rule intravenous injections in a child as young as this are attended with considerable difficulty.

It is noted that no comment has been made on the serologic results of this treatment. It would be advisable to give the prescribed course of treatment whether or not the Wassermann and flocculation tests become negative. In a child with syphilis, presenting the group of symptoms described, who has lived to the age of 2, the prognosis as a rule is fairly good. This, of course, is dependent on whether or not the viscera or the nervous system has become involved. Some time during the course of treatment an examination of the spinal fluid should be made to determine whether or not neurosyphilis is present. When the prescribed treatment has been completed, the child must, of course, be placed on observation and examined at least annually, subsequent treatment being dependent on the progress of the patient.

NUMBNESS OF THUMB WITH PAROXYSMS OF PAIN

To the Editor:—A primipara, aged 29, who has always been in excellent health and whose last menstrual period occurred Jan. 16, 1935, complained of numbness of the right thumb associated with paroxysms of pain, two weeks after missing this period. This pain has continued paroxysmal in character up to the present time and now is extending up the radial aspect of the forearm and involves the first and second fingers of the right hand. The pain is so severe that it interferes with sleep. When these attacks of pain come on, the veins of the thumb and thenar eminence become engorged and the thumb becomes swollen. This pain lasts for about half an hour and then subsides. The patient has been checked carefully. The teeth are in good condition; she had some maxillary sinus infection, which has been cleared up. The kidneys are normal, the blood count is normal, and the Wassermann reaction is negative. She has been on a balanced diet with plenty of viosterol, dicalcium phosphate and brewers' yeast. Can you suggest any possible cause and what further treatment might be indicated? M. D., Pennsylvania.

ANSWER.—Three conditions suggest themselves with the history, which is rather incomplete. The first is a vasomotor disturbance associated with a neuritis of the median nerve either infectious or traumatic; the second is a brachial entity such as a partial vascular occlusion, and the third is a cervical cord tumor. The following should be done: a careful motor and sensory examination of the entire right upper extremity; reaction of the skin of both forearms to cutaneous injections of histamine; determination of skin temperatures of the right and left thumb and thenar eminences; roentgen examination of both shoulders, arms, elbows, forearms and wrist; the effect of immersing the involved hand and forearm in hot and cold water. If these are negative, a spinal puncture should be done with a careful manometric study to determine the presence of a spinal block. One may carry out the following treatment: absolute rest; drinking of copious amounts of liquids or the taking of a gallon of Ringer's solution daily through a Rehfuss tube; elevation of the involved extremity, and intramuscular injection of some substance such as typhoid vaccine or histamine for the purpose of producing dilatation of the peripheral vessels. The treatment may be carried out only if the spinal puncture fails to reveal any evidence of spinal block. If the latter is found, a laminectomy is indicated.

TREATMENT OF LEUKOPENIA

To the Editor:—Please discuss the methods of correcting leukopenia, giving the relative value of such medications as pentnucleotide, omnaden (Winthrops Chemical Company), milk proteins and other foreign proteins. Also is there any known relation between leukopenia and humidity or temperature? I am at present encountering a great number of leukopenias, most of them with a relative lymphocytosis, without corresponding anemia. Symptomatically, these patients merely complain of a lethargy and excessive fatigue. Many of them have many vacuolated white cells, both leukocytes and lymphocytes. Could you give the significance of these, if any? E. W. CARTWRIGHT, M.D., Oceanside, Calif.

ANSWER.—The correction of leukopenia must depend on the underlying cause in each individual as it is determined after careful clinical and laboratory investigation. It is possible for the total white count to be relatively low, between 3,000 and 5,000 for example, and the individual to be entirely well. On the other hand, leukopenia may at times be an important sign of disease. Any foreign substance injected into the normal body incites a cellular reaction reflected in the blood by a more or less transitory leukocytosis. The magnitude and duration of such responses depend on the sensitiveness of the bone marrow and/or spleen to the given stimulus. The various types of foreign food and bacterial proteins or chemical irritants are advised by certain authorities in leukopenic states on the basis of this nonspecific reaction as demonstrated in normal animals or in the normal human body. In disease, however, other factors enter into the picture and a leukocytosis does not necessarily follow. A somewhat different rationale underlies the advocacy of administration of some derivative of nucleic acid when additional increments of granulocytes are desired. Jackson has shown the nucleotides to be constituents of normal plasma. Animal studies have shown sodium nucleinate or the nucleotides to be the most powerful specific stimulus of neutrophilic proliferation in bone marrow, and in ectopic foci elsewhere in the body, of any nontoxic physiologic substance yet studied (Doan). Furthermore, its use in selected clinical

patients has resulted in the appearance of myelocytic increases in the peripheral blood prior to the increase in total white count, entirely comparable with the reticulocyte response following liver or iron therapy in appropriate anemic states, and serial bone marrow biopsies have confirmed the stimulatory and maturative changes in the myeloid elements underlying these changes in the peripheral blood (Doan).

Ordinary atmospheric humidity and temperature fluctuations do not appreciably influence the white count beyond the physiologic limits for normal. However, when the temperature and humidity are raised, as in air conditioned cabinets used for fever therapy, there is an initial leukopenia followed by a marked leukocytosis.

When leukopenia with a relative lymphocytosis is encountered with definite clinical symptoms, the physician must consider several possibilities: Schultz's syndrome of agranulocytic angina; aleukemic leukemia, lymphatic or monocytic; infectious mononucleosis; typhoid; malaria; allergy. In occasional highly nervous, overactive individuals, extreme fatigue and exhaustion will in themselves depress the granulopoietic function to the danger point; in such instances complete physical and mental relaxation alone will accomplish recovery. If aminopyrine or other myelotoxic drugs have been taken without a physician's prescription and careful oversight, a granulopenic leukopenia may result. A careful drug history should be taken in every case showing this tendency to a low white count.

Vacuolated granulocytes and lymphocytes reflect directly some chemical or bacterial toxin in the body. They usually are found in conjunction with "toxic granulations" in the neutrophilic leukocytes and nuclear degenerative changes in the lymphocytes. Vacuolation usually represents a peripherally acting toxic agent, which may depress the number of circulating units without destroying the hematopoietic centers.

"Correcting leukopenia" resolves itself into the most meticulous analysis of each patient presenting this sign as one element in a syndrome, and treating the whole individual.

MISCARRIAGE

To the Editor:—A white married woman, aged 24, had a gonorrheal infection at the age of 19. There is no history of salpingitis. The cervix was cauterized when she was 21; she became pregnant one year ago and carried her baby until the sixth month, at which time she had a miscarriage after life had ceased for about three weeks. She is now pregnant again in her second month. What are the probabilities for a recurrence of a miscarriage. Will injections of the glandular extracts help her? If the miscarriage does recur will a curettage perhaps help in future pregnancies?

M.D., New Jersey.

ANSWER.—It is hardly likely that the miscarriage at six months was due to the gonorrheal infection which the patient acquired five years ago. Furthermore, if gonorrhea were the etiologic factor, there would almost certainly have been evidence of gonorrhea at the time of the miscarriage. When a gonorrheal infection interferes with fertility it nearly always does so by producing sterility, but it seldom results in a miscarriage or in death of the fetus. The sterility in the female is usually due to occlusion of the fallopian tubes but it may be caused by a cervical infection. However, if the latter is present, gonococci may be usually found in the cervix. Gonorrheal endometritis is an infrequent occurrence and nearly always a temporary one. It interferes with nidation of the ovum. Syphilis, on the other hand, is responsible for many miscarriages in the later months of pregnancy and for a large number of fetal deaths near or at term. Therefore this patient should have one or more Wassermann tests made and her history should carefully be gone into to see whether any secondary manifestations were ever noted. It is unfortunate that the fetus and the placenta were not studied at the time of the miscarriage for evidences of syphilis. A thorough investigation should be made of the cervix, Bartholin's glands and ducts and Skene's ducts to see whether any gonococci are present in these areas. If any are found, treatment should of course be instituted. If neither syphilis nor gonorrhea is found there need be no special concern that there will be another miscarriage. It not infrequently happens that a woman's first pregnancy terminates in a miscarriage, especially if the pregnancy occurs after a long period of sterility. The only glandular extract that may be helpful in cases of repeated miscarriages is corpus luteum or progestin. However, the only action of this extract is to allay the irritability of the uterus and therefore it acts only indirectly in preventing death of a fetus. There is surely no necessity to use this substance at the present time. If a second miscarriage occurs, it may be advisable to perform a curettement to see whether any light can be shed on the etiology of the miscarriages by a study of the endometrium. However, a curettement should not be performed if evidences of gonorrhea are present.

CHRONIC BRONCHITIS WITH EMPHYSEMA AND RIGHT VENTRICULAR FAILURE

To the Editor:—A man, aged 59, has had asthma for the past three years, which he says followed a severe chest cold. He has been tested twice in different laboratories for allergic sensitivity, but this has been found negative. He has had autogenous vaccines made from the secretions of the nose and throat, but besides having untoward reactions on inoculation of the vaccine he has derived no benefit from it. For the past two winters he has been in Arizona but has had no relief. There is severe emphysema of the chest but only a slight amount of wheezy breathing. Inspiration is accompanied by voluntary effort and comes in short frequent inspirations. Expiration is not long drawn out as one would expect in typical asthma. The lower lip is quite cyanotic. The least amount of exertion results in severe dyspnea and extreme discomfort, which is relieved by 10 drops of epinephrine. I have never heard râles during an attack. Recently he has had marked edema of the ankles and penis. Am I safe in putting him on digitalis, since he is taking epinephrine five or six times a day? Would you give this patient scillaren instead of digitalis? Also would you use a diuretic and if so, what one? I am using diuretin.

M.D., New York.

ANSWER.—It seems most likely from the description of the attacks, the cyanosis, the severe dyspnea, the general edema and the marked pulmonary emphysema that the condition described represents chronic bronchitis with emphysema and right ventricular failure with peripheral edema. The so-called cor pulmonale, or emphysema heart, represents the diagnosis. If this is the case digitalis, rest and the relief of dyspnea by the judicious use of sedatives, morphine if necessary, are indicated. Diuretic management is particularly effective in cases of this type, especially when there is extensive cardiac degeneration. The drugs of choice are the acid salt types of diuretics, ammonium nitrate or ammonium chloride, with a relatively low sodium chloride intake and neutral or acid ash diets. The mercurial diuretics (of which salyrgan is one) are particularly effective when they are employed in combination with such a program.

If this patient has a true bronchial asthma, treatment should be directed to its cause. An allergic type of asthma uncommonly makes its first appearance at the age of this patient. Reflex causes such as sinusitis, polyposis and other diseases of the upper air passages might be exciting causes for asthma of reflex type. Bacterial types of asthma have apparently been considered. In the case of primary bronchial asthma, digitalis may be used with some caution because of the occasional increase in bronchospasm. However, in the presence of decompensation the treatment outlined is applicable.

Schillaren has no advantages over digitalis if the effects are properly evaluated.

TOXICITY OF DYES IN TEXTILE INDUSTRY

To the Editor:—In general what are the toxicity and the minimal lethal dose of the various kinds of dyes used in the textile industry for dyeing cotton cloth? What are the most toxic of these, and the minimal lethal dose? Most of the dyes used in medicine are used in doses of about 2 to 7 grains (0.13 to 0.46 Gm.). I want to find out if there are any dyes that would produce death in less than 1 grain (0.065) doses.

W. H. ZEIGLER, Phar.D., Charleston, S. C.

ANSWER.—No finished dyes, such as used in the textile industry, or the intermediates thereto, are known to possess such toxicity as to produce death in human beings in less than 1 grain (0.065 Gm.) doses. Arsenic, entering into aniline dyes, is not known to have killed an adult in amounts less than 2 grains (0.13 Gm.). Aniline may appear in unaltered form as an impurity in finished dyes. The minimal lethal dose of this substance is perhaps in excess of one-half ounce (15 cc.), 25 cc. having caused death in at least one instance. The minimal lethal dose of the oxalic acid frequently used along with cotton dyes as a mordant is approximately 4 Gm. Chromium compounds likewise used along with dyes have caused death after an intake of approximately 10 Gm. The toxicity of aniline dyes long has been overestimated. Apart from skin irritation and apart from the harmful action of lead, arsenic, chromium and antimony entering into aniline dyes or employed concurrently, few dyes are harmful. At least 130 coal tar dyes have been specified as suitable for use in foods. The harm arising from dyestuffs is limited largely to the intermediates of dye manufacture rather than to the finished products. Extensive discussion of dyes and dyeing may be found in "Occupation and Health," published by the International Labor Office, Geneva, in 1934. A less extensive chapter may be found in "Legal Medicine and Toxicology," by Peterson, Haines and Webster (Philadelphia, W. B. Saunders Company, 1926) volume II. These two cited publications in turn furnish additional references to the literature.

VARICOSE VEINS OF FOREARM

To the Editor:—Will you please let me know where I may find literature pertaining to the treatment of varicose veins of the forearm. Recently I was consulted by a woman who had moderate sized varices on the upper and lower parts of both legs but which caused her neither pain nor discomfort. Her complaint was of a group of varicose veins of moderate size covering an area of about 4 inches square, involving the superficial veins of the posterior surface of the right forearm. These varices caused her considerable pain, at times intense. Are injections advisable in this case?

M.D., Michigan.

ANSWER.—A distribution of varicosities such as those described is rare. One must differentiate between a simple valvular incompetence and secondary dilatation of the superficial veins, a congenital vascular anomaly that may extend beneath the superficial fascia, or a true venous hemangioma. Attacks of intense pain might suggest recurrent attacks of phlebitis with residual phleboliths, thickening of the veins and increased surface temperature. The possibility of some venous compression proximal to the dilatations must also be considered. Injections preceded by a ligation proximal to the dilatations may be considered, but, if the phlebectasia is well localized, complete removal in competent hands is safe and simple.

TRAUMATIC ANEURYSM

To the Editor:—While a man, aged 29, was shoeing a horse, a lunge on the part of the animal caused him to be injured in the left wrist. This injury consisted of the penetration of one of the shoeing nails into the wrist at the usual place for taking the pulse. He tells me that there was a spurt of blood and immediately came to me. I dressed the wound by applying an antiseptic and a pressure bandage, using a generous ball of cotton over the area as a pressure pad even though there was no bleeding at the time and merely a large swelling with one puncture hole. Tetanus antitoxin was administered. A swelling persisted, which is now fluctuating and also pulsating, assuring the diagnosis of a traumatic aneurysm in my judgment. Would you please inform me as to what is indicated? The tumor is approximately an inch in diameter.

HAROLD V. MANGUM, M.D., Ackley, Iowa.

ANSWER.—The development of a pulsating swelling following such an injury is typical of a traumatic aneurysm.

This is probably a false rather than a true aneurysmal sac, which is no doubt connected to the radial artery.

Operation is indicated regardless of the type of aneurysm. A tourniquet should be applied and the aneurysm should be either dissected out and removed or all of the anastomosing blood vessels ligated and cut.

No harm would result from ligating the radial artery and vein, unless the ulnar artery and collaterals were also impaired.

FAT ATROPHY AFTER INJECTION OF INSULIN

To the Editor:—I have a patient who develops an atrophy of the subcutaneous fat at the point of injection of insulin. Can you explain this reaction? Please let me know whether it has occurred in other patients.

A. L. GRAFF, M.D., Cedar City, Utah.

ANSWER.—Although this phenomenon does not occur in most cases, it has been noted occasionally by many observers. Its explanation is not known.

CRACKING NOISE IN JAWS

To the Editor:—In your reply to the inquiry regarding a cracking noise in the jaws (Dec. 21, 1935, p. 2095) you remark that it is necessary to watch that the patient does not open the mouth too wide. Lucky the husband who gets by with such advice to his spouse! Such a suggestion may bear more weight in patients with cracking jaws; unfortunately a conservative treatment is not always effective and the condition may become so embarrassing and painful as to require a more radical procedure.

So-called intermediate cracking created by an obstacle in the upper jaw articulation is observed during the opening of the mouth. The terminal cracking, originating toward the end of the same movement, is due either to a habitual dislocation in the upper, i. e., meniscotemporal, articulation or to a subluxation in the lower, i. e., meniscocondylar, articulation. The last mentioned variety is the most frequent cause of terminal cracking. The underlying cause is probably a deforming arthritis. Traumas, infectious and toxic processes or a constitutional inferiority of the cartilage play a rôle in the genesis of this arthritis. Dental anomalies should not be overlooked. Obstinate intermediate cracking and also the habitual subluxation in the lower articulation may require an excision of the disk, while a habitual dislocation of the upper articulation may necessitate an artificial limitation of motion. Konjetzny's transposition of the disk forward or Lindemann's splitting of the tubercle is the operation of choice in such cases. It goes without saying that an operation is an "ultimum refugium" and should be considered only if conservative treatment fails.

Further details on the subject may be found in the following two papers:

Axhausen, G.: *Deutsche Ztschr. f. Chir.* **232**: 238, 1931.
Truffert, P.: *Bull. méd., Paris* **44**: 855 (Nov. 22) 1930.

JOSEPH K. NARAT, M.D., Chicago.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA: Juneau, March 3. Sec., Dr. W. W. Council, Juneau.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, March 28. *Applications must be filed not later than February 28.* Oral, clinical and pathological examination of all candidates will be held in Kansas City, Mo., May 11-12. *Applications must be received not later than April 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City, Mo., May 11 and New York, Oct. *All applications and case reports must be filed sixty days before date of examination.* Asst. Sec., Dr. Thomas D. Allen, 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Kansas City, Mo., May 9. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: St. Louis, Mo., May 8-9. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Kansas City, Mo., May 8-10. Sec., Dr. B. R. Kirklin, Mayo Clinic, Rochester, Minn.

CALIFORNIA: Los Angeles, March 9-12. *Reciprocity.* Los Angeles, March 18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, Feb. 8. *Prerequisite to license examination.* Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular).* Hartford, March 10-11. *Endorsement.* Hartford, March 24. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homeopathic).* Derby, March 10. Sec., Dr. J. H. Evans, 1488 Chapel St., New Haven.

ILLINOIS: Chicago, Jan. 28-30. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

IOWA: Des Moines, Feb. 25-27. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, March 10-11. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MASSACHUSETTS: Boston, March 10-12. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413 State House, Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS. *Parts I and II.* Feb. 12-14, May 6-8, June 22-24, and Sept. 14-16. Ex Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEVADA: *Reciprocity.* Carson City, Feb. 3. Sec., Dr. Edward E. Hamer, Carson City.

NEW HAMPSHIRE: Concord, March 12-13. Sec., Board of Registration in Medicine, Dr. Charles Duncan, State House, Concord.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 27-30. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

PUERTO RICO: San Juan, March 3. Sec., Dr. O. Costa Mandry, Box 536, San Juan.

VERMONT: Burlington, Feb. 12. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

WYOMING: Cheyenne, Feb. 10-11. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

North Carolina June Report

Dr. B. J. Lawrence, secretary, North Carolina State Board of Medical Examiners, reports the written examination held in Raleigh, June 10-14, 1935. The examination covered 7 subjects. An average of 80 per cent was required to pass. Sixty-four candidates were examined, all of whom passed. Twenty-nine physicians were licensed by endorsement. The following schools were represented:

PASSED School	Year Grad.	Per Cent
College of Medical Evangelists	(1935)	88.6
Howard Univ. College of Medicine	(1934) 87.4, 88.6, (1935)	91.4
Emory University School of Medicine	(1935)	84, 90.1
Northwestern University Medical School	(1935) 83.9, 86.4,	91.1
Johns Hopkins University School of Medicine	(1933)	82.1
Univ. of Maryland School of Medicine and College of Physicians and Surgeons (1935) 87.1, 88.6, 88.7, 88.9, 89.3, 90.9,		91
Harvard University Medical School	(1935)	90.1
Cornell University Medical College	(1935) 88.7,	90.9
Long Island College of Medicine	(1935)	88.6
New York University College of Medicine	(1935)	88.7
Syracuse University College of Medicine	(1934) 85.3, (1935)	89.1
Duke University School of Medicine	(1933)	86.1,
90.6, (1934) 85.1, 89.1, (1935) 92.1		
Jefferson Medical College of Philadelphia	(1935)	92.7, 93.3
Temple University School of Medicine	(1934)	87.3,
90.3, 91.7, (1935) 83.1		
University of Pennsylvania School of Medicine	(1935)	87.7,
88.3, 88.6, 89.7, 90, 90.3, 90.9, 91.3, 91.7		
Medical College of the State of South Carolina	(1935)	91.7
Meharry Medical College	(1930) 80, (1935)	86.4, 94.1
Medical College of Virginia	(1933)	84.9,
92.3, (1934) 90.1, 82.3, (1935) 86.7, 87.7, 88, 88.1, 88.7, 88.7, 88.9, 89.6, 91, 91, 91		
Queen's University Faculty of Medicine	(1934)	80

LICENSED BY ENDORSEMENT School	Year Grad.	Endorsement of
College of Medical Evangelists	(1933)	N. B. M. Ex.
Georgetown Univ. School of Medicine	(1923)	Pa., (1934) Maryland
Howard University College of Medicine	(1932)	Georgia

Atlanta School of Medicine	(1911)	Georgia
Emory University School of Medicine	(1923), (1931), (1934)	Georgia
University of Georgia Medical Department	(1926)	Georgia
University of Louisville School of Medicine	(1933)	Indiana
Tulane University of Louisiana School of Medicine	(1933)	Louisiana
Johns Hopkins University School of Medicine	(1931)	Maryland
University of Minnesota Medical School	(1933)	New York
Washington University School of Medicine	(1926)	N. B. M. Ex.
University of Cincinnati College of Medicine	(1932)	Ohio
Jefferson Medical College of Philadelphia	(1932)	Tennessee
University of Pennsylvania School of Medicine	(1929)	New York, (1934) N. B. M. Ex.
Medical College of the State of South Carolina	(1934)	S. Carolina
Univ. of Tennessee College of Medicine	(1932, 2), (1933, 3)	Tennessee
Vanderbilt University School of Medicine	(1931)	Penna.
Medical College of Virginia	(1931), (1933, 2), (1934)	Virginia

Book Notices

A Treatise on Medical Jurisprudence. By Benton S. Oppenheimer, LL.B., LL.M., Professor of Law, College of Law, University of Cincinnati. Cloth. Price, $4. Pp. 290. Baltimore: William Wood & Company, 1935.

Medical jurisprudence, according to the author, a member of the Cincinnati bar, deals (1) with the application of the principles of medicine to the problems that lawyers encounter in legal matters and (2) with the application of the principles of law to legal questions that sometimes trouble physicians in the course of practice. The author, as a lawyer, has wisely limited his text to a discussion of the latter function of the art. Concerning such matters as identity, impotence and sterility, rape, pregnancy, abortion, legitimacy and illegitimacy, infanticide, wounds, asphyxiation, poisoning, and death and changes after death, his book is silent. Its scope, and the relative weight given to different topics, may be inferred from the fact that after an introductory chapter on medical jurisprudence and the practice of medicine, covering twenty pages, four chapters are devoted to a discussion of the relations between physicians and patients, covering ninety-three pages, and one chapter, covering 103 pages, is devoted to the law of evidence. One chapter, eleven pages, is devoted to the law governing hospitals, another, ten pages, to dying declarations, and another, twenty-eight pages, to miscellaneous topics, such as the physician's right to compensation, compulsory medical or surgical treatment, the right to perform necropsies and the office of coroner. Copious citations to legal authorities are given in support of the author's statements, with explanatory footnotes where indicated. But notwithstanding the meticulous care with which this book seems to have been prepared, not a few loose statements appear.

The author is obviously in error when he says that special examining boards have been established in several states, in a number of medical specialties, which prescribe qualifications for physicians proposing to designate themselves as specialists, conduct examinations of such physicians and issue certificates to those who pass such examinations, to indicate that they have met the requirements (p. 33). No state has as yet established such a board.

The reader may easily be misled by the author's statement (pp. 21-22) that a contract whereby a physician guarantees to effect a cure, to be binding, must be supported by some "definite" consideration, if it is meant thereby to imply that the consideration moving from the patient to the physician in such a case must be a consideration separate and apart from that which supports the physician's general contract of service. Of course, a guaranty may be agreed on in an independent contract—as, for instance, when it is made after the general contract for service has been entered into—and if that is the case a consideration for that particular contract is necessary. There seems to be no reason, however, why a contract of guaranty should not be embodied in the general contract and based on the same consideration, and such is believed to be the general practice when such contracts are entered into at all.

A form of release (p. 40) is suggested by the author to be used for the purpose of absolving operators of x-ray apparatus and similar apparatus from liability for injuries to their patients. The form suggested covers only such injuries as occur in the course of treatment. So far as such forms of release are to be used at all, they should be made to cover injuries occurring as a result of diagnostic procedures also. No release, however, can absolve an operator of x-ray apparatus or of similar apparatus from liability for injuries caused by his own future neglect, ignorance, unskilfulness and culpably bad judgment. Releases of that character are contrary to public policy. (*Hales* v. *Raines*, 162 Mo. App. 46).

In the discussion of hospitals, the term "public hospital" seems to be used as synonymous with "government hospital." Many privately owned and operated hospitals are "public hospitals" in the ordinary acceptation of that term, in that they are established and maintained primarily for the benefit of the public and not for the advancement of any private interest. Probably the distinction intended by the author in his discussion of hospitals is that between private hospitals operated for profit and private hospitals—commonly referred to as charitable hospitals—no part of the net earnings of which inures to the benefit of any private shareholder and which are operated as public charities. Government hospitals are in a class by themselves.

One of the forms proposed by the author (p. 227) to enable hospital authorities lawfully to disclose information concerning a patient who is or has been under treatment in the hospital provides for the authorization of such disclosure by "the nearest relative" of the patient and not by the patient himself. If the patient is a minor or is non compos mentis, presumably the parent or guardian can lawfully authorize the disclosure of information concerning him; but no legal authority is known for the authorization of such disclosures during the lifetime of the patient, by relatives, when the patient is not a minor, and the right of a relative to authorize such disclosures even after the death of the patient is at least questionable. In any event, how near must the relationship be in order to confer authority to consent to disclosure, and who is to determine the authority of a professed relative in any given case? The fact that the person who signs the form authorizing the release of information is required to recite in it that he is "the nearest relative and legally responsible for the release of information with regard to such patient" is hardly conclusive.

The author's proposed form (p. 97) for the release of a hospital from liability for the departure of a patient from the hospital against the advice of his physician is not clear. It implies that some one other than the patient himself is to execute it and that the patient is in fact "discharged" by the hospital authorities on the advice of some one other than the patient's attending physician. Presumably the situation intended to be met by this form is that in which the patient himself insists on leaving the hospital of his own volition, against the advice of the hospital authorities and without being discharged by them, and any such form should so state and should be executed by the patient himself.

As is too commonly the practice of legal writers who discuss expert testimony and privileged communications, the author overlooks the responsibility of lawyers for such evils as exist with respect to them. It is possible that the right of a patient to make a full and free disclosure of his life in order that he may be relieved or cured of disease works an injustice to the public and to his adversary in a criminal prosecution or a civil suit oftener than does the right of a client to make to his lawyer a full and free disclosure of his life and misdeeds; but that fact has not yet been shown, for lawyers seldom question the sanctity of communications between lawyer and client. It is to be hoped that some day a way will be found whereby the privilege between physicians and patients and between lawyers and clients can be maintained to a degree sufficient to make available to the sick and to the criminal at all times the services of physicians and of lawyers, without at the same time impeding the administration of justice. But the advent of that time will not be hastened by criticisms directed solely at the lesser part of the evil of privilege as it now exists; that is, at the evil inherent in the privilege between physician and patient.

In his criticism of medical expert testimony, the author apparently overlooks the facts (1) that no expert witness, medical or otherwise, is ever placed on the witness stand without the consent and approval of a judge, who is fully authorized to exclude him; (2) that, except in those rare instances in which courts themselves summon expert witnesses on their own initiative, no so-called expert is ever placed on the witness stand who has not previously been introduced into court by counsel who has investigated—or is supposed to have investigated—the

moral and professional qualifications of the witness and found them to be just the sort of qualifications that counsel needed; and (3) that just as long as lawyers maintain a market for the testimony of venal and incompetent so-called expert witnesses, and courts set too low standards of fitness or complaisantly allow themselves to be imposed on by unscrupulous lawyers who proffer as expert witnesses men whose professional and moral unfitness the court itself might readily determine, just so long will the abuse of expert testimony in all fields continue.

The author falls into a rather dangerous error when he writes (p. 155):

> Of course, the physician, as well as any other expert, may enter into such agreement as he may see fit with either a litigant or an attorney, concerning the compensation which is to be paid for his services in court.

As a matter of fact, any agreement or contract whereby a physician obligates himself to testify as an expert witness on condition that his compensation, if any, is to be proportionate to the amount of the award or judgment is void as against public policy (*Weinberg* v. *Magid* (Mass.) 189 N. E. 110). It has been held that even an agreement by which a physician is to receive for his testimony as an expert witness more than the statutory fee allowed an ordinary witness, when the physician, under the laws of the state, might have been summoned and compelled to testify without compensation other than that of an ordinary witness, is void for want of consideration (*Ealy* v. *Shetler Ice Cream Co.* (W. Va.), 150 S. E. 539). In some states, too, there are statutes regulating the fees that may be paid an expert witness, which an expert cannot safely ignore.

A physician served with a valid subpena must appear in response to it, as the author states, but in some states it does not follow that after having responded to that subpena he can be compelled, if he makes timely objection, to testify as an expert witness without arrangements having been made for payment for his services of fees satisfactory to him, within the limits, if any, specially set by the laws governing the court in which he testifies. The rule with respect to such fees varies in the several states. In federal courts it has been held that a person cannot be compelled to testify as an expert witness unless arrangements have been made to compensate him for his services (*In the Matter of Roelker*, 1 Sprague 276; *In the Matter of Major William Smith*, 24 Ct. of Claims Repts. 209; *Cheatham Electric Switching Device Co.* v. *Transit Development Co.*, 261 F. 792).

The foregoing criticisms have seemed to be necessary in order that persons who may be led to read or refer to this book through this review may not be misled to their detriment. It would be unfair to the author, however, not to recognize the large amount of labor that he has put into this volume. In later editions, no doubt, the errors that have crept into the first edition will be corrected.

Die physikalischen und technischen Grundlagen der Hochfrequenzbehandlung: Diathermie: Arsonvalisation: Kurzwellen. Von Dr. Med. et Phil. Hans Weisz. Mit einem Geleitwort von J. Kowarschik. Paper. Price, 3.90 marks. Pp. 76, with 36 illustrations. Vienna: Julius Springer, 1935.

This small brochure is written by one who has the advantage of being both a physicist and a physician. He has undertaken to present the fundamentals of high frequency therapy in a style so free from technical diction that physicians without basic training in electrophysics will at once understand the energy utilized in diathermy, d'arsonvalization and short wave therapy. In this aim the author has attained only a modicum of success, for it is inconceivable that, by a mere perusal of definitions and an abbreviated exposition intermixed with a number of mathematical formulas, one can grasp so complicated a subject as the one here presented. However, a study of this small volume will aid the novice in overcoming the first barriers and stimulate an interest in the details of this branch of medicine. After a foreword by Kowarschik in which this well known Vienna electrotherapist briefly surveys the advances and rôles of the three modalities with reference to their clinical application, the author concisely discusses the relationship of induction, alternating current, the oscillating circuit, undamped oscillation and radio transmitting tubes, radiation, and passage of high frequency currents through conductors for therapeutic purposes. The work concludes with the technical, medical and surgical applicability of high frequency currents and may be regarded as a useful primer.

John Whitridge Williams: Academic Aspects and Bibliography. By J. Morris Slemons. Cloth. Price, $1.50. Pp. 109, with one illustration. Baltimore: Johns Hopkins Press, 1935.

The manner in which this book was written indicates the devotion and affection which the author had for the subject of this biography. The life of John Whitridge Williams is discussed from the point of view of teacher, investigator, dean of the Johns Hopkins University School of Medicine, and personality. The contributions which Williams made to obstetrics in particular and to medicine and humanity in general are described in detail. Those who are fortunate enough to have come under the direct influence of Williams know full well that the encomiums showered on this beloved character are by no means exaggerated. At the end of the book are a number of bibliographies. This book is a valuable addition to the history of obstetrics, especially in the United States, and should be in the possession of every obstetrician and every medical alumnus of Johns Hopkins.

Diseases of the Nose and Throat for Practitioners and Students. By Charles J. Imperatori, M.D., F.A.C.S., Professor of Clinical Otolaryngology, New York Post-Graduate Medical School, Columbia University, New York, and Herman J. Burman, M.D., Instructor of Clinical Otolaryngology, New York Post-Graduate Medical School, Columbia University, New York. Cloth. Price, $7. Pp. 723, with 480 illustrations. Philadelphia, London and Montreal: J. B. Lippincott Company, 1935.

This textbook, written in outline form for the general practitioner, the senior medical student and those taking postgraduate work in the field of nose and throat as well, does competently what it sets out to do; namely, to describe as comprehensively as possible the diseases most frequently encountered in the two specialties. The style is clear; there are many good illustrations. The emphasis on the details of operative technic is, perhaps, too great when one considers that this book was primarily not written for the specialist, who should be the only one to undertake most of these interventions. Apart from this, the work is well done and interesting not only for those for whom it was intended but for many of wider experience.

Short Wave Therapy: The Medical Uses of Electrical High Frequencies. By Dr. Erwin Schliephake, Privatdozent for Internal Medicine at the University of Jena. Authorized English translation by R. King Brown, B.A., M.D., D.P.H., from the second and enlarged German edition. With foreword by Elkin P. Cumberbatch, M.A., M.B., B.Ch. Cloth. Price, 21/–. Pp. 238, with 94 illustrations. London: Actinic Press, Ltd., 1935.

This translated work from the German provides the English speaking profession an opportunity to evaluate critically the therapeutic development of a special range of high frequency current-hertzian short wave radiation, in which Schliephake and the German school have played such a conspicuous part. The present edition is a laudable attempt to present the author's thesis regarding the clinical value of a new therapeutic method of high frequency, which requires that the subject be placed in the condenser field of a closed oscillatory circuit. The English version presents a literal but rather choppy translation of the author's studies but includes the major and important data, so that in spite of too close an adherence to the German idiom the reader is able to obtain satisfactory orientation of the subject. The exposition follows the general plan of the original text and includes (1) a general survey of the nature and development of short electric waves for medical application, (2) experimental evidence of its thermal and selective influence on laboratory and human material, (3) its physiologic and pathologic effects on animals and men, (4) its effect on pathologic processes, (5) and evidence of its clinical value in a large variety of diseases. While it is appreciated that the translator has taken great pains to render English speaking physicians a valuable service, we note deviations from the original which will be keenly felt by those especially interested in scientific and literary details. As an example, the exhaustive bibliographic references in the original volume have unfortunately been greatly reduced in this version to the detriment of readers interested in collateral studies. No reason is given for the elimination of a large number of authors and titles. It is also regrettable that the translator has failed to provide an adequate index, which would have enhanced the value of this edition.

Individual Exercises: Selected Exercises for Individual Conditions. By George T. Stafford, M.S., Director, Corrective Physical Education, University of Illinois, Harry B. DeCook, M.A., Director, Corrective Physical Education, Northwestern University, and Joseph L. Picard, M.S., Director, Corrective Physical Education, University of Arizona. Paper. Price, $1. Pp. 111, with 100 illustrations. New York: A. S. Barnes & Company, Inc., 1935.

This small book on individual exercises is one of the biggest bargains ever offered. It was written by three well qualified men and presents the subject in readable and instructive form. The authors have avoided technical language and have presented basic information on exercises for individual needs. The physician, physical therapist and physical educator will find the book helpful in selecting exercises for a large number of conditions that ordinarily respond to this form of treatment. The volume contains many interesting line drawings.

Genetics. By H. S. Jennings. Henry Walters Professor of Zoology in the Johns Hopkins University. Cloth. Price, $4. Pp. 373, with 70 illustrations. New York: W. W. Norton & Company, Inc., 1935.

"Genetics" is for most technically untrained readers a sealed book. Professor Jennings offers here those features of genetics of which every educated person should have knowledge. His book is, in other words, a brief outline of this subject made as simple as it can be made for the intelligent reader. He discusses the basis of genetics, its relation to the development of characteristics, the rules and ratios of inheritance and genetic variations. Notwithstanding the efforts at simplification, the book is difficult and certainly not usable by any one below college age. Even in these instances the reader must have some fundamental knowledge of biology to get much out of the work.

Nutrition of Mother and Child. By C. Ulysses Moore, M.D., M.Sc., F.A.C.P., Director Nutritional Research Laboratory, University of Oregon Medical School, Portland, Oregon. Fourth edition. Cloth. Price, $2. Pp. 258, with 46 illustrations. Philadelphia & London: J. B. Lippincott Company, 1935.

Since its initial appearance in 1923 this book has been rewritten so as to include added information concerning allergy, acid base balance, mineral employment, protein requirements, and vitamins. Further stress is put on the necessity, as well as the possibility, of every mother nursing her baby, and explanations are given to make this possible. There is no effort to have the book replace the physician but, rather, there is a constant emphasis on the need for medical consultation. Infant feeding formulas and schedules outlined in the earlier editions have been omitted. The book should be found useful to all who are interested in the nutrition of the mother and her baby. Recipes are appended which the mother will find of some value.

Men and Women: The World Journey of a Sexologist. By Magnus Hirschfeld. English version by O. P. Green. Cloth. Price, $4. Pp. 325, with 14 illustrations. New York: G. P. Putnam's Sons, 1935.

Hirschfeld, the distinguished sexologist who prepared this volume, is now dead. The book represents perhaps a "swan song" for a man whose contribution to a difficult field was exceedingly great. Dr. Hirschfeld traveled throughout the world before his death and was everywhere recognized as one who had contributed greatly to medical science and to human happiness. His book will rank high among travel books because he viewed life understandingly. Readers will find it not only informative along the lines of Dr. Hirschfeld's chief interest but also a most interesting book of travel.

Vitality: A Book on the Health of Women and Children. By Elizabeth Sloan Chesser, M.D. Cloth. Price, $2.50. Pp. 254. New York: Oxford University Press, 1935.

Book stores are filled with volumes of books intended to educate mothers in the signs and symptoms of disease, and many of them contain advice which it is hoped will influence mothers to call a doctor early in cases of illness. Many times, however, such books have the opposite effect and lead to self diagnosis and medication, with obviously harmful results. In general, the information given in this book will not encourage self medication. The material concerning the hygiene of the sickroom will be found especially valuable for mothers. A description is given of many common ailments in language that will be understood by some mothers but not by the majority. At times the material is inaccurate and the advice given is not that which is generally accepted as sound. However, the volume does contain useful information about health and sickness, and mental and physical hygiene.

Grundzüge der praktischen Seelenheilkunde. Von Dr. med. Fritz Künkel. Boards. Price, 6.75 marks. Pp. 168. Stuttgart and Leipzig: Hippokrates-Verlag GMBH, 1935.

This small volume gives a brief survey of the general disturbances of character occurring in so-called diseases of the mind and a brief outline of the various methods of therapy possible. The material is insufficient for an understanding of the basis of various therapeutic methods from the theoretical side, and also insufficient for an individual who wishes to learn the methods of treatment. The book does not perform any particularly useful purpose, for it simply reiterates what can be found in much more illuminating fashion in other works.

Food and Beverage Analyses. By Milton Arlanden Bridges, B.S., M.D., F.A.C.P., Director of Medicine, Department of Correction Hospitals, New York. Fabrikold. Price, $3.50. Pp. 246. Philadelphia: Lea & Febiger, 1935.

Here in an excellently printed handbook, nicely bound, are available complete tables of nutritive and caloric values of foods, corrected according to the most recent data, as well as brief discussions of the essentials in the food field. The book is a most vaulable reference for those interested in modern dietetics.

Russell A. Hibbs, Pioneer in Orthopedic Surgery, 1869-1932. By George M. Goodwin. Cloth. Price, $2. Pp. 136, with 17 illustrations. New York: Columbia University Press, 1935.

Like the man it discusses, this book is an inspiration. The principles that Hibbs enunciated and taught constitute a milestone in the progress of orthopedic surgery. He was a pioneer, a surgeon and a teacher. His contributions have been invaluable to general, industrial and orthopedic surgeons. He was a pioneer in the field of fusion operations. He did more than any other man to teach the profession the value and technic of operative fusion on the spine, hip, knee and ankle. His work on tuberculosis of bones, joints and lateral curvature of the spine is classic. Several of his epoch-making papers are reproduced.

Introduction à la chirurgie thoracique. Par E. E. Lauwers. Préface du Professeur Proust. Paper. Price, 20 francs. Pp. 112. Paris: Masson & Cie, 1935.

This monograph is intended to act simply as an introduction to thoracic surgery, acquainting the reader with what can be done and what has been done and then allowing him, should he so desire, to investigate further. There is no bibliography. The French is simple and easily readable. It is doubtful whether there is a great field for a book exactly of this type, completely devoid of bibliography and illustrations and treating the subject matter superficially.

The Proceedings of The Charaka Club. Volume VIII. Half-cloth. Price, $5. Pp. 202, with illustrations. New York: Columbia University Press, 1935.

This new volume contains some of the proceedings of the Charaka Club, including particularly some fine contributions by George D. Stewart, Samuel W. Lambert, Francis Packard, Bernard Sachs, Casey A. Wood, Archibald Malloch, Frederick Peterson and Robert L. Dickinson. These materials deal largely with the history of medicine and medical letters, the material being presented in beautiful form. It merits the attention of all those interested in these fields. Certainly any one to whom the previous volumes have been available will want to complete his collection of these documents.

The Vitamin A Content of Sour Cream Butter, Sweet Cream Butter, and Margarines. By I. L. Hathaway and H. P. Davis. College of Agriculture, University of Nebraska, Agricultural Experiment Station, Research Bulletin 79. Paper. Pp. 8, with 3 illustrations. Lincoln, Nebraska, 1935.

The chemical analysis of nineteen samples of margarines is given and their vitamin A content is compared with that of sour cream and sweet cream butter. The margarines were very poor sources of vitamin A as compared to butter. The fat content of the butter varied from 80.2 to 81.5 per cent, of the margarines from 78.3 to 89.2 per cent.

Bureau of Legal Medicine and Legislation

TAXATION OF PHYSICIANS AND HOSPITALS UNDER THE SOCIAL SECURITY ACT

The Social Security Act[1] imposes no taxes on physicians and hospitals as such, but the taxes that it imposes on employers and employees affect in those relationships physicians and, with certain exceptions, hospitals. No taxes are imposed on account of employment by or in the service of a hospital, clinic or dispensary, if it is organized and operated exclusively for charitable, scientific or educational purposes and no part of its net earnings inures to the benefit of any private shareholder or individual. Neither such an institution nor physicians employed by it are liable for taxes on account of salaries or fees paid or received. But a hospital, clinic or dispensary, organized and operated for profit, is taxable even though a profit does not result from its operations. No tax is imposed on an employer of labor for purely domestic service, or of casual labor not in the course of the employer's business, or of agricultural labor, or of labor performed by persons 65 years or more of age. The taxes imposed by the act apply to a physician as an employer, in the course of his practice, only when he has one or more persons in his employ in connection with his professional activities.

Taxes on taxable employers are imposed in two categories, (1) taxes on all employers and (2) taxes on employers of eight or more persons, subject in both classes to the exceptions stated above. An employer may be taxable in both categories.

Taxes Payable by All Employers.—Under the caption "Taxes with Respect to Employment," title VIII of the act imposes an excise tax on every taxable employer, *regardless of the number of persons employed by him.* This tax is a stated percentage of the wages paid by the employer after Dec. 31, 1936, to the employee or employees in his service after that date. The term wages includes all remuneration paid either in cash or in some other medium, except that the wages of an employee are not subject to tax as to that portion which exceeds $3,000 a year. The tax is at the rate of 1 per cent of the wages paid with respect to employment in 1937, 1938 and 1939. In 1940, and every fourth year thereafter, the rate increases 0.5 per cent, until 1949, when the maximum rate, 3 per cent, is reached. This is to be the fixed rate of taxation thereafter. Under this title of the act, but not under the title next following, discussed below, a correlated income tax of similarly varying percentages of wages received is imposed on employees, which the employer must collect and pay to the federal government, by deductions from wages when and as he pays them.

The taxes collected under title VIII of the Social Security Act, described above, are intended to be used for the payment of the federal old age benefits authorized by title II of the act. Employees of hospitals, clinics and dispensaries who are not taxed under title VIII of the act are not entitled to such benefits. As taxes under this title are not payable on account of employment during the year 1936, more detailed consideration of them can be postponed until a later date.

Taxes Payable by Employers of Eight or More.—Under the caption "Tax on Employers of Eight or More," title IX of the Social Security Act imposes on every employer *of eight or more persons,* except those within the exempted classes described above, an excise tax with respect to employment. In this case, however, the tax is to be levied on the entire wage of the employee, regardless of its amount; a salary and bonus of $250,000 a year is taxed at the same rate as is a wage of $500 a year. This tax during the calendar year 1936 is at the rate of 1 per cent of the total wages paid by the employer; in 1937 it is to be 2 per cent, and every year thereafter 3 per cent. The taxes collected under this title of the act, and similar taxes raised by the several states, are to be used for the payment in cash of unemployment benefits to eligible unemployed workers, in accordance with the terms of state unemployment laws.

1. Public No. 271, Seventy-Fourth Congress, approved Aug. 14, 1935.

The taxpayer under this title is entitled to take credit each year against the federal taxes payable by him under title IX of the Social Security Act, for the amount he has paid on account of unemployment benefits, during the corresponding taxable year, into a state unemployment fund, if the state law under which these payments have been made is acceptable to the Social Security Board; except that the credit claimed by the taxpayer cannot exceed 90 per cent of the federal tax and no part of a contribution that an employer has made to a state unemployment fund can be used as a credit against the federal tax if the employer has deducted or proposes to deduct it from the wages of his employees. If the federal Social Security Board declines to approve a state unemployment insurance law, or if a state has no such law, the entire tax paid by employers in that state under this title goes into the federal treasury, and no unemployed person in that state receives any benefit under this title.

Regulations Governing Collection of Taxes.—The Commissioner of Internal Revenue is authorized to promulgate such regulations as may be necessary to facilitate the collection of the taxes imposed by the Social Security Act. Under title IX, imposing taxes on employers of eight or more employees, proper records of salaries and wages paid during the current calendar year 1936 must be kept, but no tax is payable until Jan. 31, 1937, and the tax on salaries and wages paid in the tax year 1936 can then be paid in a lump sum or in four equal quarterly instalments, as a taxpayer elects. The pertinent part of the regulations issued by the commissioner with respect to the records to be kept under title IX is appended. These regulations prescribe no particular method of accounting or record keeping; it is sufficient that they clearly and accurately show the required information. Forms to facilitate the keeping of such records are now on the market, and since the accounting problems confronting physicians and hospitals as employers differ in no way from similar problems confronting other employers, no effort is made here to advise or suggest forms for use.

Recent decisions of the United States Supreme Court cast doubt on the constitutionality of the Social Security Act, in part or in its entirety. It is to be presumed constitutional, however, until the Supreme Court has spoken, and until that time physicians and hospitals affected by the act will do well to follow its mandates as they are now written.

Regulations Issued by the Commissioner of Internal Revenue, Dec. 20, 1935

. . . . . .

"Art. 2. (*a*) Every person subject to tax under the Act shall, during the calendar year 1936 or any calendar year thereafter, for each such calendar year, keep such permanent records as are necessary to establish:

(1) The total amount of remuneration payable to his employees in cash or in a medium other than cash, showing separately, (*a*) total remuneration payable with respect to services excepted by section 907 (*c*),[2] (*b*) total remuneration payable with respect to services performed outside of the United States, (*c*) total remuneration payable with respect to all other services.

(2) The amount of contributions with respect to employment during the calendar year paid by him into any State unemployment fund, showing separately, (*a*) payments made and not deducted (or deductible) from the remuneration of employees, (*b*) payments made and deducted (or deductible) from the remuneration of employees, (*c*) payments made with respect to services excepted by section 907 (*c*).[2]

(3) Such other information as will enable the Commissioner to determine whether such person is subject to the tax, and, if subject to the tax, the amount thereof.

(*b*) No particular method of accounting or form of record is prescribed. Each person may adopt such records and such method of accounting as may best meet the requirements of his own business, provided that they clearly and accurately show the information required above, and enable him to make a proper return on the prescribed form.

(*c*) Records are not required to show the number of individuals employed on any day, but must show the total amount of remuneration actually paid during each calendar month and the number of individuals employed during each calendar month or during each such lesser period as the employer may elect.

(*d*) Any person who employs individuals during any calendar year but who considers that he is not an employer subject to the tax . . . should be prepared to establish by proper records (including, where necessary, records of the number of persons employed each day) that he is not an employer subject to the tax."

2. Section 907 (*c*) defines the classes of employers and employees exempted from the taxes discussed. These classes have been stated in this article.

"Art. 3. All records required by these regulations shall be kept safe and readily accessible at the principal place of business of the person required to keep such records, or at such other place or places as the Commissioner, upon written application by the person concerned, may approve. Such records shall at all times be open for inspection by internal revenue officers, and shall be preserved for a period of at least four years from the due date of the tax for the calendar year to which they relate."

MEDICOLEGAL ABSTRACTS

Malpractice: Acute Urethritis Following Instrumentation by Drugless Practitioner.—The defendant, McCoy, a drugless practitioner, in treating the plaintiff for gonorrhea, on December 14, inserted an "ultraviolet ray orificial applicator, also called a cold quartz rod" into the urethra and turned on an electric current for a few seconds. He also placed a diathermy electrode in the rectum, with a metal plate near the small of the back, and heated the electrode to 102 F. One of McCoy's employees, a chiropractor, repeated this treatment four times within the next six days. On the evening of December 20 the patient called in a nonsectarian practitioner, who found it impossible for the plaintiff to urinate. For twelve hours various means were used unsuccessfully to open up the urethra and induce urination. An operation was then performed by Dr. Dowey and Dr. Willis and the bladder drained by means of a tube, which was kept connected through an abdominal incision for three weeks, until the urethra had been healed sufficiently to allow urination.

At the trial of an action for malpractice, which the plaintiff subsequently instituted against McCoy, Dr. Dowey testified that prior to the operation the plaintiff was suffering from acute urethritis of apparent traumatic origin from mechanical instrumentation, thermal injury of ultraviolet origin, and acute cystititis, both bacterial and traumatic. After the operation, he testified, a good deal of tissue within the urethra sloughed out, which indicated to him that the tissue within the urethra and a portion of the bladder had been so traumatized that it died, and that the plaintiff had suffered third degree burns of both the urethra and the bladder. He further stated that "the phenomena which presented themselves clinically in his case were not characteristic of a noncomplicated gonorrheal urethritis. They were characteristic of a case which had been traumatized through brutal instrumentation." Dr. Willis testified "that the retention of urine was due to photothermic destruction of the lining membrane and inflammation of the cavernous urethral structure from prolonged application of the ultraviolet light." On behalf of the plaintiff, a specialist in urology also testified, in response to a hypothetical question, that in his opinion the plaintiff had been too vigorously treated and burned with the diathermy or the violet ray. The jury returned a verdict in favor of the plaintiff for $7,500 and from a judgment entered thereon the drugless practitioner appealed to the district court of appeal, second district, division 1, California.

The defendant seemed to contend that the evidence adduced at the trial was not sufficient to sustain the verdict. With this contention, however, the district court of appeal did not agree. From the testimony of the operating physicians, said the court, as to the condition of the plaintiff's urethra after the treatment given by the defendant, the jury was thoroughly justified in finding that the plaintiff had suffered severe injury. The duty which the defendant owed to his patient has been thus stated in *Hesler* v. *California Hospital Co.*, 178 Calif. 764, 174 P. 654:

> A practitioner is, however, required by law to use the same degree of care, diligence, and skill in the treatment of his patients as is possessed and used by prudent, skilful, and careful practitioners of the same school practicing in the same vicinity.

If the condition of the plaintiff was, as testified to by Dr. Dowey, a condition which in itself indicated that this was "a case which had been traumatized through brutal instrumentation," it can hardly be said that the defendant used the care and skill required by the law. The jury was warranted in finding accordingly if they believed the testimony.

The defendant next contended that the trial court should not have permitted the physicians called by the plaintiff to testify, since they were not drugless practitioners. In answering this contention, the court quoted from *Hutter* v. *Hommel*, 213, Calif. 677, 3 P. (2d) 544, as follows:

> We might add that we are cited to no rule obtaining in this jurisdiction and know of none which would preclude a physician trained in one medical school from testifying in a proper case as to the treatment rendered by a physician or surgeon trained in a different school. Such a rule might be promulgated where charges of negligence in a malpractice case are directed toward some special course of treatment to be tested by the general doctrine of a particular school, but it is not applicable to a case of this character where the alleged malpractice is based upon general charges of negligence relating largely to matters of almost common observation within the experience of every physician and surgeon.

The judgment in favor of the plaintiff was accordingly affirmed.—*Ellinwood v. McCoy, (Calif.), 47 P. (2d) 796.*

Constitutionality of Washington Basic Science Act.—Wehinger was prosecuted for attempting to practice chiropractic in Washington without a license. It was stipulated that he was graduated from a "qualified" chiropractic school, that he was not licensed to practice chiropractic in Washington, and that he could not have been examined for a license, even had he applied, by the chiropractic examining committee until he had first passed an examination before an impartial board in the basic sciences. By inadvertance, the stipulation contained a statement that the basic sciences were *"equivalent to materia medica,"* but the trial court decided to disregard this statement. The defendant was found guilty and, from a denial of a motion for an order in arrest of judgment or for a new trial, the defendant appealed to the Supreme Court of Washington.

The chiropractor's main contention seemed to be that the Washington basic science act, as applied to chiropractors, was unconstitutional because it required chiropractic applicants to pass examinations in subjects that bore no relation whatever to "the functions of chiropractic healing." The basic science law, said the Supreme Court, requires applicants for a license to practice any form of the healing art, including chiropractic, before presenting themselves to their respective professional examining committees, to pass examinations, to be given by an impartial board, in anatomy, physiology, chemistry, pathology and hygiene. The chiropractic practice act also requires applicants to pass examinations in anatomy, physiology, hygiene, symptomatology, nerve tracing, chiropractic orthopedy, principles of chiropractic and adjusting. It is thus plain that only two subjects, viz., chemistry and pathology, are included in the basic science law which are not included in the chiropractic practice act. The court believed that pathology, in which the basic science act requires applicants to be examined, and symptomatology, in which the chiropractic act required chiropractic applicants to be examined, were practically identical subjects. Webster's New International Dictionary, said the court, defines pathology as the "science treating of diseases, their nature, causes, progress, manifestations and results," and symptomatology as "the doctrine of symptoms; that part of medical science treating of symptoms of diseases; semeiology." The inclusion of pathology in the basic science act was reasonable, since if a practitioner cannot ascertain the character of an ailment he cannot intelligently treat it. Furthermore, no one can justly say that the addition of chemistry to the list of subjects as one of the basic sciences on which applicants to practice chiropractic are required to have some knowledge is an unreasonable requirement. A chiropractor, therefore, is deprived of no constitutional rights by being required, before receiving a certificate to practice his profession, to demonstrate an adequate knowledge of the subjects enumerated in the basic science act.

The court also held that the trial court acted within its power in disregarding that provision of the stipulation to the effect that the basic sciences were *"equivalent to materia medica."* It is obvious that the statement was erroneous and was inadvertently made. The court intimated, however, that it might not uphold the validity of a law which would attempt to require applicants for chiropractic licenses to pass examinations on subjects outside the scope of their practice, or which have no relation whatever to chiropractic, such as materia medica. Such a law, the court intimated, would be a denial of liberty and due process of law.

The conviction of the chiropractor was accordingly affirmed. —*State v. Wehinger (Wash.), 47 P. (2d) 35.*

Society Proceedings

COMING MEETINGS

American College of Physicians, Detroit, Mar. 2-6. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.
American College of Radiology, Chicago, Feb. 16. Dr. Benjamin H. Orndoff, 2561 North Clark Street, Chicago, Executive Secretary.
American Heart Association, New York, February 3. Dr. H. M. Marvin, 50 West 50th Street, New York, Acting Executive Secretary.
American Orthopsychiatric Association, Cleveland, Feb. 20-22. Dr. George S. Stevenson, 50 West 50th Street, New York, Secretary.
Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 17-18. Dr. W. D. Cutter, 535 North Dearborn Street, Chicago, Secretary.
Southeastern Surgical Congress, New Orleans, March 9-11. Dr. Benjamin T. Beasley, 478 Peachtree Street N.E., Atlanta, Ga., Secretary.
Western Section, American Laryngological, Rhinological and Otological Society, Del Monte, Calif., Feb. 1-2. Dr. Carroll Smith, Paulsen Building, Spokane, Wash., Chairman.

CENTRAL SOCIETY FOR CLINICAL RESEARCH

Eighth Annual Meeting, held in Chicago, Nov. 1 and 2, 1935

The President, DR. CYRUS C. STURGIS, Ann Arbor, Mich., in the Chair

(Continued from page 248)

Associated Diabetes Mellitus and Pulmonary Tuberculosis

DRS. RICHARD M. MCKEAN and GORDON B. MYERS, Detroit: This study is based on 100 cases of coexisting diabetes and tuberculosis, which were under observation for an average period of 581 days, including an average hospital stay of 336 days. In 80 per cent of these the tuberculosis was classified as far advanced. Cavitation was demonstrable in 90 per cent. The composition of the average diet was as follows: carbohydrate, 111 Gm.; fat, 165 Gm.; protein, 64 Gm.; total calories daily, 2,187. This diet furnished an average of 34 calories per kilogram and was sufficient to permit an average weight gain of 7.5 kilograms. The energy requirements, calculated in percentage over and above the basal, fell within the estimated range of normal in the majority of cases of diabetic tuberculosis. The routine medical treatment of tuberculosis was used exclusively in twenty-seven cases and was supplemented by collapse therapy in seventy-three. Unilateral pneumothorax was induced in fifty-three cases, bilateral in five. Phrenic nerve surgery was performed in forty cases, thoracoplasty in two and pneumolysis in one. Fifty patients are dead, all but three from tuberculosis. To date, an arrest or an apparent arrest has been obtained in 56 per cent of the moderately advanced cases and in 19 per cent of the far advanced cases. The results in this group of cases of diabetic tuberculosis compare favorably with the results obtained at the same hospital in nondiabetic tuberculosis of like severity. It would appear that as long as the diabetes is carefully controlled it does not have an adverse effect on the course of pulmonary tuberculosis.

Action of Drugs on Induced Ventricular Rhythms

DR. M. H. NATHANSON, Minneapolis: Epinephrine acts on the heart to raise the rhythmicity of ventricular foci leading to ectopic ventricular rhythms. There is evidence that epinephrine plays an important part in the genesis of ventricular fibrillation. The purpose of the present study was to determine the efficiency of drugs in counteracting this action of epinephrine. Ventricular beats from multiple ventricular foci were induced in patients by the intravenous injection of 0.1 mg. of epinephrine. Various drugs were then administered and after a suitable interval the same dose of epinephrine was repeated. It was found that these ventricular rhythms could be reproduced by intravenous epinephrine after the administration of ergotamine, potassium salts, quinine and barbiturates. They were effectively prevented by quinidine and acetylbetamethylcholine.

DISCUSSION

DR. WILLIAM B. KOUNTZ, St. Louis: I have studied coronary flow in revived perfused human hearts and have used a number of these drugs. I have in many instances used epinephrine in reviving the hearts and later have been much interested in stopping the foci arising in the ventricle, some of which may have been the result of the epinephrine and others simply atypical foci in the heart. I have found that there were two chief types of drugs that would change the action of epinephrine or would prevent the development of ventricular extrasystoles. One type consisted of drugs that increase the coronary artery flow, and the other type drugs that would decrease the irritability of the ventricle, quinidine and acetylbetamethylcholine, falling into the latter group. I would suggest that, in addition to the drugs which depress the ventricular irritability, those which dilate the coronary arteries will also modify the action of epinephrine.

DR. M. H. NATHANSON, Minneapolis: I have done only one experiment on the effect of epinephrine before and after the giving of a theophylline compound. In that case I injected 0.24 Gm. of theophylline intravenously and then observed the reaction and found that it was not modified.

Effects of Alkalosis and Acidosis on the Electrocardiogram

DR. PAUL S. BARKER, Ann Arbor, Mich.; DR. E. LEE SHRADER, St. Louis, and ETHEL RONZONI, PH.D., St. Louis: The observation of transient inversion of the T waves during hysterical hyperventilation prompted this investigation. Alkalosis, produced by hyperventilation and by ingestion of sodium bicarbonate, was accompanied by flattening or inversion of the T waves. Acidosis, produced by exercise and by ingestion of ammonium chloride, was accompanied by an increase in the amplitude of the T waves. The relation of the T wave changes to changes in the p_H of the venous blood, while by no means close, was fairly consistent throughout the series of experiments. Normal adults served as subjects, and adequate control observations were made.

Effect on Heart of Experimental Pleural Conglutination

DRS. HORACE M. KORNS, HARRY LANDT, O. R. HYNDMAN, RAYMOND GREGORY and C. N. COOPER, Iowa City: The ancient assumption that pleural obliteration (as well as many other chronic diseases of the thorax or respiratory organs) leads to selective right ventricular hypertrophy was investigated experimentally. Seventeen dogs were allowed to survive for periods ranging from five to twenty-eight months after pleural conglutination of varying extent had been produced. The ventricles were separated by Herrmann's method and the left ventricular weight, right ventricular weight (L/R) ratios compared with Herrmann's L/R ratios for normal dogs' hearts. The results indicate that, in the dog, conglutination averaging 34 per cent (maximum 65 per cent) of the total pleural area does not cause hypertrophy of the right ventricle.

The Specific Etiology of Whooping Cough

DR. GERALD S. SHIBLEY, Cleveland: Although it is fairly generally believed that whooping cough is caused by Haemophilus pertussis, there are many who still insist that the disease may be caused by a filtrable virus or that a virus accompanies the pertussis organism to produce the disease. The few successful transmission experiments with pertussis organisms have all been open to the criticism that a virus might have been present. By developing methods of indentification of the virulent form and of its maintenance in this form in the laboratory, it is possible to carry virulent strains long enough to preclude the presence of virus. With such strains maintained as long as two years in the laboratory, it has been possible to produce typical whooping cough in several chimpanzees. The disease in these animals was characteristic clinically, bacteriologically, hematologically and at postmortem examination. In support of the clinical manifestations of the disease, phonograph records of typical paroxysms in chimpanzees have been obtained. These successful transmission experiments with virus-free Haemophilus pertussis lead to the conclusion that this organism is the sole cause of whooping cough.

Pneumococcus Serum to Which Heterophile Antibody (Forssman) Has Been Added

DRS. LAWRENCE D. THOMPSON and EMMET KELLY, St. Louis: During the past winter opportunity was offered to treat alternate cases of pneumonia as they appeared in the City Hospital wards with a new (Lilly) heterophile antipneumococcus serum. Forty-two patients received serum treatment and a control group of

fifty patients received no serum. The series has been analyzed on the basis of age incidence, type of pneumococcus, day of administration of serum in relation to day of onset of disease, and many other clinical factors of interest. The series is too small for the results to be conclusive. The evidence, however, suggests that such serum may be a definite improvement over other types of serums.

DISCUSSION

DR. LEE FOSHAY, Cincinnati: I wonder whether the controls for these series were really adequate. I should like to see patients with typed pneumonias divided three ways instead of two: one group given no serum at all, one given Felton's serum alone, and one given Felton's serum plus the heterophile antibody. Otherwise, how is a true comparison obtained? I would not wish to say that heterophile antibody is without effect, but I think it would be more convincing if in another test the patients were divided into three groups.

DR. MOSES BARRON, Minneapolis: In addition to this criticism of Dr. Foshay, there are some things in this paper that show one has to be careful in drawing conclusions. It is generally admitted that treatment with antipneumococcus serum after the third or fourth day of the illness does not give much result. In the series presented there was shown great improvement from the serum even from the fifth to the eighth day of the disease. One should therefore be hesitant about drawing conclusions from this series.

DR. EMMET KELLY, St. Louis: I recognize that we have to be cautious in making any statements about the efficacy of the serum, and I hope we have. With regard to the suggestion of dividing the pneumonias into three groups, we are particularly interested in the action of the serum in types III and IV. Felton's serum has not been of much value in these types.

Mechanism of Postsplenectomy Erythroid Reequilibrations

DRS. CARL V. MOORE and CHARLES A. DOAN, Columbus, Ohio: Splenectomy performed as a therapeutic measure in the treatment of congenital hemolytic icterus, whether the disease is chronic, subacute or in actual hemoclastic crisis, is constantly attended by an immediate and a sustained elevation in the peripheral erythrocyte level by a million or more cells (Doan, Curtis and Wiseman, THE JOURNAL, Nov. 16, 1935, p. 1567). In contrast, the rise that occurs in patients with hypoplastic anemia at the time of splenic extirpation is not constant, is of lesser degree, and is not sustained. An adequate understanding of the mechanisms responsible for these phenomena is dependent on actual measurement of changes in the circulating blood, plasma and cell volumes. In the present study a fall in plasma volume of from 10 to 35 per cent with resultant concentration of the formed elements present in the blood stream was observed in practically all instances of splenectomy and was sufficient to affect the whole of the transient peripheral erythrocyte rise usually observed in cases of hypoplastic anemia. The rise obtained at the time of splenectomy for congenital hemolytic icterus, on the other hand, was only partly explained by such a concentration phenomenon and was more particularly the result of an actual increase of from 150 to 450 cc. in erythrocyte volume. That these added cells are probably delivered from the spleen at the time of operation seems likely, since a comparable increase in circulating erythroid elements was observed following epinephrine-stimulated splenic contraction in our patients with splenomegaly from various causes, and in certain animal experiments, particularly those with the sheep. The change was not obtained after epinephrine in adults with normal spleens or in subjects on whom splenectomy had previously been performed. It is suggested, therefore, that the immediate increase in the volume of circulating red blood cells that was first noted when splenectomy was performed in individuals with congenital hemolytic icterus is a phenomenon not necessarily peculiar to this disease but one that is dependent, rather, on the size of the spleen, the structure and function of its cells, and the contractility of its musculature. The results, however, in hemolytic icterus are unusually spectacular, because elimination of the hemolytic element, by splenectomy, makes at once more effective the bone marrow formation and delivery of cells.

The fall in plasma volume may be attributed to the following factors: (1) loss of the reservoir fluid volume of the spleen itself, (2) a possible obstruction to the venous outflow from the liver when epinephrine is used (P. D. Lamson) with resultant increase in the lymph flow from that organ and consequent plasma loss, and (3) diaphoresis at the time of operation as the result of a mild shock phenomenon. The latter effect was observed in other moderately severe abdominal operative manipulations to a degree comparable to that recorded in our cases of splenectomy with plasma volume decrease.

Blood volume determinations throughout these investigations were made with the method employing brilliant vital red dye; measurements of dye concentration in plasma were read spectrophotometrically.

DISCUSSION

DR. MOSES BARRON, Minneapolis: Some of the results in this paper are borne out by a case which I saw during the past week. A woman with a very large spleen, the cause of which had not been definitely diagnosed but which was probably some form of leukemia or reticulosis, had a blood picture showing a marked anemia, from 40 to 50 per cent hemoglobin, and from 2 to 3 million red cells, with a marked leukopenia, ranging from 1,000 to 850 leukocytes. She was observed for a few weeks and then the spleen was removed. She was given epinephrine just before the removal of the spleen and a definite shrinkage of the spleen on the operating table was visible. Three days after operation the hemoglobin went up to 70 per cent and the leukocyte count to 7,500, so there must have been an enormous extrusion of red blood cells into the circulating blood to bring about such an unusual rise in hemoglobin and white cell count so soon after operation.

DR. CARL V. MOORE, Columbus, Ohio: Splenectomy apparently does not effect any immediate change in the peripheral reticulocyte level; the reticulocytes fall steadily but gradually to normal over a period of days. With respect to the citation of one case of congenital hemolytic icterus that did not respond in the manner described, we can only say that in fifteen consecutive cases of the disease, five of which were in hemoclastic crisis, the phenomenon of immediate peripheral erythrocyte increase on the day of operation occurred in all cases. It is to be re-emphasized that in conditions other than hemolytic icterus the changes in the hematopoietic equilibrium brought about by splenectomy have been neither so constant nor so spectacular.

Hypophysectomized Animals After Exposure to Reduced Atmospheric Pressure

DR. OVID O. MEYER, GERTRUDE E. STEWART and ETHEL W. THEWLIS, Madison, Wis.: Following hypophysectomy, the reticulocytes in the blood of rats are diminished and a low level is persistent. When these animals are placed in a chamber and exposed to a barometric pressure of 422 mm. of mercury, equivalent oxygen tension 12 per cent of an atmosphere, corresponding altitude 16,000 feet, there is no demonstrable increase in the reticulocytes, whereas a sharp increase is regularly noted in control animals. If the hypophysectomy has been done eight or nine days before exposure to the reduced pressure, polycythemia results comparable to that of the controls. If the hypophysectomy is done from twenty-five to thirty-two days before, there is no significant increase in the hemoglobin or number of erythrocytes under the same experimental conditions. Examination of the bone marrows of hypophysectomized animals shows a lack of the profound hyperplasia regularly found in the controls. Orchidectomized and thyroidectomized rats exhibit a response analogous to that of normal animals.

Experiments on the Distribution of Red Bone Marrrow

DRS. C. B. HUGGINS, B. H. BLOCKSOM JR. and W. J. NOONAN, Chicago: These experiments were concerned with the distribution of erythropoietic bone marrow, and its centripetal regression (E. Neumann). A gradient of erythropoiesis exists in the extremities of mammals and birds. By means of thermocouple technic it was found that a thermal gradient exists in the marrow of the extremities roughly similar to that of the surrounding muscles. With normally fatty marrow as an indicator (especially the rat tail), several experiments were devised in which a common factor was elevation of the temperature of the

marrow over many days, and it was found that a marked increase of hematopoietic as well as macrophage cells resulted in the experimental bone marrow.

The Filament Nonfilament Leukocyte Count

DRS. B. E. GOODRICH and F. JANNEY SMITH, Detroit: Counts of 200 cells were made every few days in fifteen consecutive cases after coronary artery occlusion. Results of these counts were contrasted in recovered and fatal cases. A nonfilament percentage curve not above 24 per cent in the first ten days following occlusion and an eosinophil percentage curve above 2 per cent are interpreted as favorable prognostic indications. A higher nonfilament percentage, ranging between 26 and 40, and less than 1 per cent of eosinophils in daily counts over the same period would suggest an unfavorable outcome. The nonfilament and eosinophil percentage curves afford greater prognostic information in myocardial infarction than does the total leukocyte count.

DISCUSSION

DR. F. JANNEY SMITH, Detroit: About a year ago, Dr. Cooksey emphasized before this society that the prognosis after coronary occlusion was somewhat better in the younger group of individuals than it was in the older group. Other than age, whether or not the patient recovers following an acute attack of coronary occlusion depends in the main on the size of the infarction. We hope by following out these counts in our cases that this information may give us added help in determining whether or not the patient has a small or large area of infarction and therefore assist in determining the prognosis. I believe from our limited experience that it is desirable to follow these curves for eight or ten days after the coronary occlusion before attempting to estimate the probable severity of the infarction on the basis of this information.

DR. W. B. COOKSEY, Detroit: Those of us who see patients and patients' families most of the waking hours of our lives consider the prognosis in coronary occlusion a very important thing. Most of the patients that I see I am not able to hospitalize. I am afraid to hospitalize many of them. When I see them in their homes, they are usually so critically ill that it seems to be adding some danger to attempt to move them. With portable electrocardiographs, oxygen tents and other adjuncts to treatment so easily available, I fail to see that hospitalization has very much to offer. Consequently, I have treated most of my cases of coronary thrombosis at home. However, blood studies are not so easily available in the home, and I have no experience in this phase of the problem. The work of Dr. Goodrich and Dr. Smith has contributed added knowledge of what is going on. In the home I think I can tell what is going to happen by the height of the temperature rise, by the number of days it exists, particularly when I take into consideration what happens to the blood pressure. I believe that if the temperature has reached 102 and stayed there for several days, or if the temperature has persisted at 101 for seven, eight or nine days, associated with a connsiderable fall in blood pressure, the outcome is more apt to be fatal for the reason Dr. Smith has mentioned, that it indicates a larger anemic infarct. I should like to hear Dr. Goodrich or Dr. Smith comment on what the temperature curve has been in these cases. Another matter that has interested me is this: Some fatal cases in which intramural thrombosis existed seem not to have shown appreciable fever and have misled me sometimes. I should suspect that these cases of intramural thrombosis without anemic infarct, which fail to exhibit a fever, might likewise fail to show a high nonfilament count. I cannot help making a report in connection with the paper I gave last year on prognosis following coronary thrombosis, since a number of physicians who have themselves had attacks have written me in view of the more optimistic attitude I emphasized. Briefly, only one of my patients is dead—a woman 74 who died of a cerebral hemorrhage following an episode of violent anger. I have this week performed an autopsy in a case in which I am sure coronary thrombosis existed in 1896. The patient died at 70 of acute occlusion of the left descending artery after leading a relatively active life as a draftsman. I think thirty-nine years is, after all, quite a long time to live after a thrombosis.

DR. B. E. GOODRICH, Detroit: In reference to Dr. Cooksey's question about temperature range, even the most severe cases of occlusion may show a moderate temperature range. A patient now in the hospital has a temperature range between 101 and 102. The total leukocyte count is 4,000 but the nonfilament count is ranging between 45 and 50 per cent. The patient has not gone into any appreciable heart failure, and gallop rhythm is not present, but I believe that he has an extensive myocardial infarction. I feel that this is one procedure which may be added to the ordinary blood count and increase our information. As far as its application is concerned, it primarily applies to the acute cases. It does not help indicate whether the patient will come back in six months with congestive heart failure or be seen five years later in comparatively good health.

Lymphocyte Types and Their Clinical Significance

DR. RAPHAEL ISAACS, Ann Arbor, Mich.: At least six types of "lymphocytes" are recognizable in the peripheral blood of normal individuals. At present it is believed that these represent stages in the development of the adult form. Data, however, show that cells derived from lymph nodes are quite different from those derived from the spleen and that each type of cell can be differentiated morphologically, enabling one to list lymphocytes and splenocytes separately in the differential leukocyte count. On this basis, two separate types of lymphatic leukemia can be differentiated, with a different prognosis and response to treatment. The preponderance of one type over the other may be linked with definite clinical phenomena.

DISCUSSION

DR. C. A. DOAN, Columbus, Ohio: I should like to ask Dr. Isaacs two questions. First, were any studies of cell respiration performed to differentiate physiologically the two types of lymphocytes he has described as emanating from spleen and lymph nodes respectively and as being associated with leukemic states of varying severity? In our laboratory, Dr. Wiseman has differentiated lymphocytes on morphologic grounds, using, however, somewhat different criteria than those presented by Dr. Isaacs. It has been possible, furthermore, to separate the pathologic states involving these different lymphocytic types on the basis of cell respiration studies (Warburg), the leukosarcoma cells giving a malignant type of cell metabolism, the cells of chronic lymphatic leukemia yielding a normal metabolism. The clinical course in the former is rapidly fatal; in the latter it may be quite chronic. The second question is whether Dr. Isaacs believes that in a fixed film preparation, however carefully made, it is possible to depend on a difference in cell size as the basis for differentiation of lymphatic elements. In my experience the size of individual cells varies so greatly in fixed films, owing to the incidental trauma of preparation, regardless of the amount of care taken, that this point is not a sufficiently accurate criterion on which to differentiate round cells.

DR. RAPHAEL ISAACS, Ann Arbor, Mich.: The cell respiration in these cells has not been determined. The younger can be told from the older type if one stains with brilliant cresyl blue, since the younger cells will stain a more brilliant blue. It is difficult even with accurate measurement to differentiate the shape and size of every cell. In a count of 100 cells one may not be able to classify 100, but one can classify enough to show the trend.

The Blood Picture in Metastatic Carcinoma of Bones

DR. FRANK J. HECK, Rochester, Minn.: It has been recognized for years that, in patients with metastatic carcinoma of bones, immature myeloid cells could appear in the blood stream apparently as the result of bone marrow irritation. This study has been carried out in a series of cases to determine the variations in the blood picture. In some instances in which relatively slight demonstrable bone changes existed the morphologic picture was indistinguishable from early chronic myelogenous leukemia, whereas in other cases in which the bone lesions were advanced, few if any changes were noted in the morphology of leukocytes.

Morphologic Changes in the Blood in Hodgkin's Disease

GRACE M. ROTH, B.S., and DR. C. H. WATKINS, Rochester, Minn.: Forty patients who had lymphoblastoma of Hodgkin's type and ten patients who had lymphosarcoma were studied for morphologic changes in the peripheral blood. The diagnosis

was made and confirmed in each case by surgical biopsy of the affected lymph node. Estimation of the number of leukocytes, the differential count and the morphologic examination were made in each instance. None of the individuals studied had received previous treatment for the disease. Results of examinations of blood were classified according to the duration of the disease and the extensiveness of the process. A slight increase in the percentage of neutrophils and a slight decrease in the percentage of lymphocytes were noted. The percentage of monocytes reached the upper limit of normal but in no instance was it above normal; a tendency for the monocytes to be shifted to the right was constantly present. The megakaryocytes could not be found on the slides. The suggestion that there is a blood picture characteristic of Hodgkin's disease could not be confirmed.

DISCUSSION

DR. C. H. WATKINS, Rochester, Minn.: It should be emphasized that none of these patients had any form of treatment prior to the studies reported. Frequently after exposure to roentgen rays there is monocytosis with a greater tendency toward a shift to the right and some variation also in the general leukocyte picture. It is true that a blood picture which shows toxic neutrophils with a shift to the right of the monocytes is perhaps suggestive of Hodgkin's disease, but since this type of blood picture in rarer instances may occur in other toxic conditions, we feel that we are not justified in describing a blood picture as characteristic of Hodgkin's disease.

DR. W. S. MIDDLETON, Madison, Wis.: The report of Miss Roth and Dr. Watkins interested me, as I worked with Dr. Bunting for many years. Very early in Hodgkin's disease a lymphocyte increase will predominate over every other blood element, and therefore there occurs a progressive increase of the polymorphonuclear neutrophils so that at the terminal stage they will amount to 90 per cent or more of the total leukocytes. I recall a patient who was brought into the clinic in whom there were 38,000 white cells, of which 98.5 per cent were polymorphonuclear neutrophils, with 0.5 per cent lymphocytes and 1 per cent monocytes. I believe that, given only the smears in lymph node diseases, Dr. Bunting's batting average in making the diagnosis has been over 90 per cent without any other knowledge of the clinical condition. From my own standpoint, I believe his real contribution is not so much from a diagnostic as from a prognostic standpoint. Given a case of Hodgkin's disease with a predominance of polymorphonuclear neutrophils, the prognosis is bad. That patient is going down hill rapidly. Following his personal work on megakaryocytes Dr. Medlar asked that blood smears from all sorts of disease be submitted in the thought that he could make the diagnosis from these alone. I understand that he has no such presumption at the present time.

Cinchophen—Is There a Safe Method of Administration?

DRS. WALTER LINCOLN PALMER and PAUL S. WOODALL, Chicago: A complete review of the published cases of cinchophen poisoning, undertaken in order to ascertain whether or not cautious and careful administration of cinchophen may be considered a "safe" procedure, showed that small doses given for very brief periods may prove fatal, discontinuance of the drug on the appearance of even the slightest symptoms does not ensure a favorable outcome, the first symptom usually recognized is jaundice, and withdrawal of the drug at this stage even with appropriate therapy does not prevent a fatal termination in approximately half of the cases. Hence it is concluded that a "safe" method for the administration of cinchophen does not exist.

DISCUSSION

DR. DON SUTTON, Chicago: Since reporting years ago on early deaths from cinchophen, I have been extremely interested, and have reported six cases following various doses. In two the liver decreased definitely in size. I think it is justifiable to conclude that a moderate degree of atrophy existed in these cases. One case is worth while in the light of the statement that there is no safe way of administering it. A man, aged 70, had a traumatic ulnar neuritis following injury. He was heavily addicted to alcohol. He had extreme pain and some two or three years ago he was advised to take a "patent medicine," which gave him complete relief from the pain. Five days later he had an urticaria and when seen was jaundiced. Some time after, because of the great relief obtained from the cinchophen, he requested that it be given under supervision. Very cautiously for three days he was given 1 grain (0.065 Gm.) of cinchophen daily. There were no effects. In three days the dose was increased, and again in another three days, until he was getting a total of 7 grains (0.46 Gm.). At the end of that time there was definite itching and jaundice. He had a large liver, which increased in size, and it looked for several days as though a fatal termination was in prospect. He recovered. This seems to represent an extreme case in which recovery occurred.

DR. W. E. POST, Chicago: I had one case of intoxication from cinchophen but was fortunate enough to have a recovery. There has arisen in my mind the last two years the question as to whether this could be the same thing that was given when the drug was first used. Frederick Müller was here about 1927 and gave a discussion on gout. He advocated the administration of cinchophen two weeks of every month over a long period, and he had had no ill effects. Why is it that he had that experience and so many of us have the experience that Dr. Palmer presented? I wonder whether Dr. Palmer could help me out with that query. Is the drug different?

DR. W. B. COOKSEY, Detroit: Four months ago I was called to see a patient who gave a history of an attack of pain which I interpreted as gallbladder colic. She had been seen by another physician and shortly thereafter developed jaundice and was not getting better, so they changed doctors. I thought, because she had a tender liver which was swollen and because she was jaundiced, that she undoubtedly had had gallbladder colic due to cholelithiasis. I sent her into the hospital, where a Graham dye test revealed absolutely nothing abnormal. Her icteric index began to decrease after a few days on the usual treatment, and I finally sent her home. Two weeks later I was calling on her when, behind a picture on the dresser, I happened to see a nearly empty bottle of cinchophen. It was news to me that cinchophen intoxication could produce colicky pain. I looked it up, however, and found that not a few cases present upper abdominal pain at the onset.

DR. K. K. CHEN, Indianapolis: Several years ago my associates and I carried out experiments in dogs with cinchophen. We gave both small and moderate doses; that is, a fraction of the minimal lethal dose. After several weeks we noticed that several dogs were beginning to die. At autopsy we always found a picture similar to acute yellow atrophy. The surviving dogs were all jaundiced in the conjunctiva. When we killed these dogs the hepatic lesions were much the same as in those that died. Then we carried out other experiments, using half the dose we had given to the previous series, administered daily by mouth. While they were doing quite well, as judged by their behavior, activity and weight, we waited for several months and then killed the animals, thinking they had probably recovered or did not develop any pathologic lesions. When we made sections of the liver, we uniformly found certain changes in the parenchymatous tissue. Our results were not published. At that time I was beginning to feel that from a pharmacologic point of view cinchophen should be considered a very dangerous drug. It was thought, however, that in human beings the therapeutic dose is much smaller than the dose we were using in animals per kilogram of body weight. I am glad that Drs. Palmer and Woodall have emphasized the toxicity of cinchophen in clinical use, which certainly bears out the results obtained from our animal experiments. I think that a better drug in the treatment of such a disease as arthritis should be looked for.

DR. PHILIP S. HENCH, Rochester, Minn.: The authors' indictment of cinchophen is impressive and one which those of us who would continue its use must be able to answer. I agree that all products containing cinchophen should be so labeled, a requirement to be made necessary by law. I agree that it is best to avoid the administration of cinchophen whenever an equally effective substitute is available. Thus, I would not prescribe it simply for its analgesic effect. Other analgesics are at hand. There is one group of cases in which my associates and I feel that the continued use of cinchophen is justified for other purposes than analgesia. I refer to cases of gouty arthritis, of which there are many more than most physicians realize. At the clinic we see about 100 such cases each year. In the

majority of these cases there is no effective substitue for cinchophen. Colchicine is of value only during the first few days of an attack of acute gouty arthritis. The use of cinchophen and a diet in cases of gout is somewhat analogous to the use of insulin and a diet in diabetes. As the majority of diabetic patients find it difficult to avoid disaster by diet alone, without insulin, so very few patients with established gout can long remain free of distressing symptoms as a result of diet alone, even though they are very careful to follow instructions. Salicylates are not the pharmacologic equivalent of cinchophen in gout. It has been shown that the administration of at least 100 grains (6.5 Gm.) of sodium salicylate daily is necessary to increase the concentration of urinary urates materially. Even so there is evidence that the increased excretion of urates after the administration of salicylates is partly the result of a diminished uricolysis and partly the result of an actual increase in the formation of urates and that it is not caused by the adventitious excretion of urates formed in the manner and concentration apparent prior to administration of salicylates. Some have reported that, instead of preventing gouty arthritis, the administration of salicylates has actually provoked an attack. The authors have spoken dramatically of "the march of death," which is presumably initiated by the first single dose of cinchophen. One must realize that, in every case of established gout, a potential march to death has begun with the very onset of gout, even before any cinchophen has been administered. According to insurance statistics, the life expectancy of the patient with uncontrolled gout is reduced at least five years. Renal stones or a gouty nephritis often may develop and slowly prove fatal; cardiovascular disease also may develop, and the patient may die of a stroke or from coronary disease. To slow up or counteract this march of discomfort if not of death, which impends to every patient with gout, I feel justified in continuing the use of cinchophen. It will help the great majority of such patients, even though the drug may be deleterious or even fatal to a very occasional patient. Discussing the situation frankly with each patient as I do, I find that, to the average patient with gout, the symptomatic discomforts and the pathologic dangers of this disease, when uncontrolled, are much more real, more present and personal (and statistically they are much more important), than the rather remote chance of a fatal cinchophen intoxication. The possibility of the latter has conservatively been estimated by some as being about 1: 600,000 among those who use the drug. Even so, our mortality in cases of cinchophen jaundice at the clinic is not nearly as high as that reported by the authors. I do not believe that they are justified in ascribing to cinchophen some of the deaths they have mentioned, particularly those which occurred in cases of atrophy of the liver, months or even years after administration of the drug had been discontinued. They have not taken into account the occasional but definite spontaneous appearance of acute yellow atrophy of undetermined origin that may develop without the administration of drugs. With the cooperation of their family physicians throughout the country, we are following the course of several hundred patients with gout who have been seen by us at the clinic. The great majority are taking cinchophen (with sugar, fluid and alkalis) intermittently, generally on two or three days each week. I know of none who have had jaundice, fatal or otherwise. A few have had urticaria and dyspepsia. These have been told to discontinue the drug. I have repeatedly reviewed the world literature on the toxicity of cinchophen. It is my recollection that in very few of the cases have the patients had gout. In the majority of cases, cinchophen poisoning has occurred in cases of chronic infectious (atrophic) arthritis. Although many of the latter patients take cinchophen, patients with gout take it much more persistently and in greater amounts. Two of our patients at the clinic, who had chronic infectious arthritis, have been taking about 90 grains (6 Gm.) of cinchophen almost daily for about fifteen years, not on our prescription but under our occasional observation. They have shown no signs of cinchophen toxicity or hepatic disease. Dr. Snell has just reminded me of another patient, a physician, who has taken from 60 to 90 grains (4 to 6 Gm.) of cinchophen daily since its introduction about 1908. He literally eats it, yet an intensive investigation of the function of his liver has not shown any evidence of intoxication. As a result of the dramatic and repeated warnings of many earnest and scientific physicians, some of them perhaps overzealous prophets of doom, we are now afraid not only of cinchophen but of aminopyrine. We are warned about barbiturates and even are told of occasional deaths from acetylsalicylic acid. As physicians, we are being hard pressed to find analgesics prescribable with complacence. From our experience with cinchophen, we have decided at the clinic to continue to approve its careful intermittent use in cases of gout (but in no other disease) not just during the attacks of gouty arthritis but in the intervals thereafter, in order to prevent the next attack and above all to ward off if possible the much more important, insidious and potentially fatal lesions in the cardiovascular-renal system.

DR. RUDOLF SCHINDLER, Chicago: I do not know whether atophan and cinchophen are the same drug. We observed, however, also in Munich cases of poisoning after the use of atophan.

DR. F. JANNEY SMITH, Detroit: I have a relative who has taken cinchophen almost daily for ten years, having a severely painful chronic arthritis. Nothing else will touch or relieve this woman's pain. If she does not take it she is crippled, and it is quite necessary for her to be able to do something. The question put up to me is whether she should continue to take this drug since more reports have been brought out about its toxicity. I noticed in the report of Drs. Palmer and Woodall that very many of the cases of liver intoxication occurred after rather brief administration of the drug. Can it not be that there are certain individuals who are very sensitive to it, and others who are very resistant, such as the patient I speak of? If this patient has taken the drug safely for ten years without trouble, would it not be better to permit her to continue to take cinchophen and obtain symptomatic relief, accepting the relatively slight risk of liver damage which is probably present in her case?

DR. WALTER L. PALMER, Chicago: With regard to Dr. Post's question, I think we can bear in mind that liver poisoning from cinchophen was described first in 1923. Two cases were reported in 1925, one in England and one in this country. It might have taken two or three years for Frederick Müller in Germany to become acquainted with the toxic action of the drug. Cinchophen poisoning occurs all over the world; reports are found in the German, French and South American literature. In regard to Dr. Cooksey's case, there are a good many instances in the literature of severe upper abdominal pain, such as he described. I am interested in the experimental work that was reported. I was glad to have Dr. Hench defend the use of the drug in gout. He has had more experience than I. If there is any other drug that will do the work in gout, it should be used. I feel that cinchophen should be labeled as poison. Now, of course, the great majority of patients can take cinchophen and take it for years without trouble, just as Dr. Hench and others have pointed out. There is only a very small percentage of cases in which the drug is toxic, but the point I wish to bring out is that this small percentage is a very definite percentage, and that for about half of them the outcome is death. It should not be used unless the indication is absolute. Dr. Hench has criticized some of these cases. I think the criticism is very well taken. We cannot set ourselves up as the final judges of the reports in the literature. I was particularly skeptical of two or three I showed and said to myself "shall I include these?" In the fatal ones, however, the lesion at autopsy was described characteristically as liver necrosis and on microscopic examination the typical destruction of the liver cells seen in cinchophen poisoning was found. There are other poisons, such as chloroform, which will do the same thing to the liver, but cinchophen in our experience and in the reports found in the literature is the most common agent. In regard to Dr. Smith's case, if the patient has taken cinchophen and obtains relief, she might continue, although there is a definite risk. This risk, however, is certainly not great when the patient has proved a tolerance to cinchophen over a period of years. It must be recalled that one patient in the series had taken cinchophen in large doses for three years and then suddenly developed acute yellow atrophy. If cinchophen is to be used, there is only one indication, gout or extremely severe arthritis, and then it should be recognized that the drug is dangerous.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases and Nutrition, Chicago

2: 511-592 (Nov.) 1935

Gallstones. A. J. Delario, Paterson, N. J.—p. 511.
Abdominal Pain as Misleading Symptom of Spinal Cord Lesions. E. D. Kiefer, Boston.—p. 520.
Autoregulation of Gastric Secretion. J. J. Day and D. R. Webster, Montreal.—p. 527.
Influence on Carbohydrate Metabolism of Experimentally Induced Hepatic Changes: IV. Block of Reticulo-Endothelial System, with Especial Reference to Kupffer Cell. T. L. Althausen and B. E. Blomquist, with technical assistance of E. F. Whedon, San Francisco. —p. 532.
Studies on Crystalline Vitamin B_1: Observations in Diabetes. M. G. Vorhaus, R. R. Williams and R. E. Waterman, New York.—p. 541.
Gastro Intestinal Manifestations of Hyperinsulinism. S. Harris, Birmingham, Ala.—p. 557.
*Treatment of Amebiasis with Iodoxyquinoline Sulfonic Acid. F. W. O'Connor and C. R. Hulse, New York.—p. 568.
Specificity of the Frei Test in Lymphopathia Venerea. H. E. Bacon, Philadelphia.—p. 570.

Treatment of Amebiasis with Iodoxyquinoline Sulfonic Acid.—During the last six years O'Connor and Hulse treated 152 cases of Endamoeba histolytica infection with iodoxyquinoline sulfonic acid. There seems reason to believe that it is a useful drug in intestinal amebiasis. It is now shown to be as effective in stopping severe symptoms rapidly and curing acute cases as it is in curing carrier cases. It will not cure all cases any more than any other drug known for the treatment of this infection. No toxic symptoms have been observed during or following its administration. In some cases the full dosage (four pills three times a day) increases the diarrhea and causes a scalding sensation during defecation. These symptoms may be eliminated by reducing the dosage without discontinuing the treatment. The drug alone is useless in the treatment of hepatic amebiasis. When liver abscess is diagnosed, present experience suggests that treatment with emetine hydrochloride hypodermically promptly carried out with the necessary precautions may stop further abscess extension. In such cases the administration of a full course (ninety-six pills) of iodoxyquinoline sulfonic acid at the same time seems warranted to prevent later reinfection of the liver from the intestine.

American Journal of Medical Sciences, Philadelphia

190: 727-866 (Dec.) 1935

Urine Formation in Amphibian Kidney. A. N. Richards and A. M. Walker, Philadelphia.—p. 727.
Urinary Concentration in Diabetes Insipidus: Comparison of Effects of Several Drugs. E. L. DeGowin, Iowa City.—p. 747.
*Nature of Osteogenesis Imperfecta. I. D. Puppel, L. E. Barron and G. M. Curtis, Columbus, Ohio.—p. 756.
*Serum Phosphatase in Osteogenesis Imperfecta. O. N. Smith and J. M. Mitchell, Philadelphia.—p. 765.
Elevated Blood Urea of Acute Gastro-Intestinal Hemorrhage and Its Significance. A. P. Ingegno, Brooklyn.—p. 770.
Effect of Anticoagulants on Sedimentation Rate. Esther M. Greisheimer, Agnes Hodapp and Edith Goldsworthy, Minneapolis.—p. 775.
*Tiger-Snake Venom in Treatment of Accessible Hemorrhage. S. Rosenfeld and S. E. Lenke, Brooklyn.—p. 779.
"Tight" (Nonregurgitant) Mitral Stenosis: Clinicopathologic Study. I. W. Held, A. A. Goldbloom and A. Lieberson, New York.—p. 791.
Active versus Conservative Management of Planned Deliveries. J. C. Hirst, Philadelphia.—p. 806.
Observations on Etiology of Toxemias of Pregnancy: Relationship of Nutritional Deficiency, Hypoproteinemia and Elevated Venous Pressure to Water Retention in Pregnancy. M. B. Strauss, Boston.—p. 811.
*Erythema Annulare Rheumaticum. A. F. Abt, Chicago.—p. 824.
Subcutaneous Fatty Nodes in Sacro-Iliac Area. C. J. Sutro, New York. —p. 833.

Nature of Osteogenesis Imperfecta.—Puppel and his co-workers present the results of an extensive investigation of a typical case of osteogenesis imperfecta in a youth aged 17 years. Their study reveals no evidence of hyperparathyroidism. The serum calcium and phosphorus are normal. The urinary excretion of calcium is normal. The patient is in a continuous but normal negative calcium balance. The plasma chloride averaged 310 mg. per hundred cubic centimeters. The daily urinary excretion of chloride averaged 3.9 Gm. This is within normal range for the low chloride intake. The blood iodine averaged 89 micrograms per hundred cubic centimeters, which is greatly increased. The daily urinary elimination of iodine averaged 101 micrograms. This indicates an increase in thyroid activity. It is suggested that this disease is due to a congenital hypoplasia of the mesenchyma, perhaps associated with a deficiency in bone phosphatase production.

Serum Phosphatase in Osteogenesis Imperfecta.—Smith and Mitchell observed a severe case of osteogenesis imperfecta from birth until death eleven weeks later, which afforded the opportunity of considering the serum phosphatase increase sporadically reported in this disease. The origin, distribution and excretion of phosphatase and its rôle in normal individuals is reviewed briefly. In the cases of osteogenesis imperfecta reported with serum phosphatase studies, an increase averaging about twice normal occurs in less than 30 per cent, chiefly in patients between the ages of 5 and 7 years. In the remaining 70 per cent the serum phosphatase was within normal limits. This elevation is more of academic interest than of clinical value at this time, as its mechanism is not yet understood. In the present case of osteogenesis imperfecta, the serum phosphatase in one determination was 1.7 times the average normal level.

Tiger-Snake Venom in Treatment of Hemorrhage.—Rosenfeld and Lenke used tiger-snake venom beneficially in checking uncontrollable local bleeding in eight patients suffering from hemorrhagic tendencies, of which three cases were thrombocytopenia, two hemophilia, one of each multiple hereditary telangiectases, prolonged jaundice and angio-asthenia with bleeding due to local action of hirudin from leech bites. There were only two occasions when doubt arose as to the efficacy of the venom. On one occasion the failure seems to have been due to a thick coating of precipitated ferric chloride and tannic acid, which interfered with the action of the venom. When this incrustation was removed and venom was applied to the raw bleeding surface, hemorrhage ceased within three minutes. On another occasion after the application of venom, a lacerated fragment of gum continued to bleed when the rest of the wound was dry. The ordinary interdental packing was serving only further to lacerate this fragment and to increase the hemorrhage from the site. The application of a venom pledget by digital tamponade to the exact point of bleeding promptly stopped the flow. Rhythmic recurrence of the bleeding tendency was observed in the hemophiliac patients. Venom does not seem to prevent recurrences of bleeding from the treated area after an interval of hours or days. Perhaps the renewed flow is due to actual trauma, such as chewing, or to the cryptic factors that influence the hemorrhage in hemophilia, or to the washing away or destruction of venom. To minimize the possibility of recurrent hemorrhage, pressure should be maintained over the site of bleeding for several hours after hemostasis has been attained. For dental hemorrhage a Barton bandage has usually been applied overnight. Neurologic examination of these patients disclosed no evidence that the neurotoxin of the venom was doing any damage. Even in patients who received large amounts (from 15 to 30 cc. of 1:5,000 solution) orally or intranasally, no impairment of the cranial nerves and no muscular weakness were noted. Locally no swelling, ulceration, necrosis or infection was observed. The wounds healed normally. Tiger-snake venom is to be employed only by topical application and is not to be injected.

Erythema Annulare Rheumaticum.—Abt noted the distinctive rash of erythema annulare rheumaticum in six of a group of children with rheumatic endocarditis. The rash is a specific exanthem associated only with rheumatic endocarditis. The lesions are pale red or bluish red semicircles or rings, which on first appearance may be from 2 to 4 mm. in diameter and which may develop into rings of from 1 to 3 cm. in diameter. The lesions are found on the chest, over the abdomen, on the sides of the thorax and on the back. They are rarely seen on the extremities and never on the face or mucous mem-

branes. The lesions are never papular but always macular. There is no itching, edema or hemorrhage associated with them. They disappear without scaling or pigmentation. Erythema annulare rheumaticum so constantly indicates the persistence of a rheumatic infection in association with a cardiac involvement that rheumatic endocarditis may be diagnosed by merely seeing this rash on the skin. Its prognostic value, in the author's experience, is varied. In the one fatal case here reported it was an ominous sign. In the other five children the rash has been noted after illnesses varying from slight colds without febrile reaction to recurrent attacks of rheumatism with fever. In the group of children under his observation at the Spaulding School, he has noted this rash more frequently than he has been able to demonstrate subcutaneous nodules. The exact nature of the rash is as yet unknown. No one has as yet established a relationship between this rash and the tuberculin reaction or the demonstration of tubercle bacilli by gastric lavage, as has been done in erythema nodosum. The occurrence of this rash in children suffering with rheumatic endocarditis, as is the case with other cutaneous lesions found in this disease, may be considered evidence of either the persistence of an active rheumatic endocarditis or a sign of reactivation of the disease.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

34: 573-716 (Nov.) 1935

Congenital Absence of Septum Pellucidum: Its Diagnosis by Encephalography. C. G. Dyke and L. M. Davidoff, New York.—p. 573.
Serial Bronchography in Diagnosis of Suppurative Pulmonary Processes. P. L. Fariñas, Havana, Cuba.—p. 579.
*Oblique Films for Study of Adhesions in Artificial Pneumothorax. R. T. Ellison, Philadelphia.—p. 592.
*Kidney Function in Acute Calculous Obstruction of Ureter: Some Observations of Kidney and Ureter Function in Acute Calculous Obstruction of Ureter, Based on Excretory Urography. L. F. Wilcox, Detroit.—p. 596.
Roentgenologic Diagnosis of Appendical Abscess. M. Ostro and H. L. Granoff, Baltimore.—p. 606.
Duodenal Diverticulosis. J. D. Lawson, Sacramento, Calif.—p. 610.
Multiple Osteochondropathy of Phalanges of Fingers. S. A. Reinberg and W. P. Graziansky, Leningrad, U. S. S. R.—p. 617.
Further Discussion of Saturation Method of Roentgen Therapy in Deep Seated Malignant Disease. G. E. Pfahler, Philadelphia.—p. 629.
Radium Emanation Treatment of Vernal Catarrh. E. P. Pendergrass and J. R. Andrews, Philadelphia.—p. 637.
Diagnosis and Treatment of Malignant Tumors of Nasal Sinuses. G. A. Robinson, New York.—p. 641.
*Further Observations on Use of Unfiltered Roentgen Rays for Superficial Cancers of Wide and Deep Involvement. B. P. Widmann, Philadelphia.—p. 644.
Three Hundred Kilovolts Treatment Machine: Preliminary Report. J. T. Murphy, Toledo, Ohio.—p. 653.
Roentgen Therapy with Seven Hundred Kilovolts. R. E. Herendeen, New York.—p. 659.
Problem of Uniform Distribution of Radiation Field in Super High Voltage Roentgen Therapy with Tubes Operating on Continuous Pump. T. Leucutia and K. E. Corrigan, Detroit.—p. 664.
Factors Influencing Quantitative Measurement of Roentgen-Ray Absorption of Tooth Slabs: III. Mechanical Factors of Tube and Machine. H. C. Hodge, G. Van Huysen and S. L. Warren, Rochester, N. Y. —p. 678.

Study of Adhesions in Artificial Pneumothorax.—Ellison asserts that the usual postero-anterior roentgenogram of the chest shows only a profile view of the collapsed lung and that there are important areas of pneumothorax lying between the lung and the anterior wall of the chest, and the lung and the posterior wall of the chest, that are not visualized in this projection. At times technically important adhesions lie in these areas. Even stereoscopic films are of but little value in this connection because adhesions which are parallel to the main beam of the roentgen ray are not visualized, or usually they are lost in the shadows cast by the collapsed lung. Any technic of roentgen examination that will visualize these areas will be a great aid in the selection of patients for intrapleural pneumolysis and in the operative attack on such adhesions. It was in an effort to better this situation that the author began using oblique exposures of the hemithorax in which the pneumothorax existed. It was found, by using a lead screen covering half a caset, 14 by 17 inches, the long way and changing it between exposures, that the two oblique views could be taken on one film, and that this, in association with one postero-anterior exposure, gave more information than a stereoscopic pair. The angle of rotation used was about 45 degrees from the plane of the film. Further rotation in the anterior oblique position will throw the shadow of the sternum into the pneumothorax space and confuse the picture, while in the posterior oblique the shadow of the spinal column will overlie the pneumothorax. In placing the patient before the caset to take the posterior oblique exposure, the forearm on the pneumothorax side should be placed across the small of the back, as this position throws the humerus out of the picture. In taking the anterior oblique exposure, the arm on the side to be filmed should be rotated inward and the point of the shoulder brought as far forward as possible. The tube, of course, should be centered over the middle of the unprotected half of the film for each exposure. It was also found satisfactory to use the same exposure technic as for the postero-anterior position, except that the time was doubled.

Kidney Function in Obstruction of Ureter.—Wilcox believes that there are several factors besides disease which may influence kidney and ureteral function and these are (1) the use of diagnostic instruments, such as the cystoscope and ureteral catheter, just prior to the intravenous urographic study and (2) the injection of drugs into the body tissues hypodermically or intravenously. The roentgenologist must be aware of these facts, which means that he must have an accurate clinical history and be in close contact with the patient during the study. In acute calculous obstruction of the ureter, certain characteristic observations are evident in excretory urography. If excretory urography is performed during the period of an acute calculous obstruction of the ureter, there is none of the opaque medium in the kidney calices, pelvis or ureter on the affected side, and the kidney shadow on that side is greatly increased in density. If the obstruction is removed there is immediate filling of the kidney calices and pelvis with the opaque medium, and the density of the kidney shadow decreases. Experimental studies on the rabbit by means of excretory urography, after blocking of the ureter for sixty minutes, reveal the same changes. The nonappearance of the opaque medium in the kidney calices has been ascribed to a reflex inhibition of urine. The author believes that experimental study would indicate that urine formation in the kidney continues to a degree and that the increased pressure in the drainage system from that kidney prevents in a mechanical manner the escape of the opaque medium from the uriniferous tubules into the calices. He offers this explanation as being the chief if not the entire reason for the nonappearance of the opaque medium in the kidney calices. He also suggests that the term "repression of urine" would be more strictly correct than "suppression of urine," as it indicates that the formation of urine by the kidney units does not cease.

Unfiltered Roentgen Rays for Superficial Cancers of Wide and Deep Involvement.—During the last five years, Widmann has extended the use of unfiltered x-rays to the treatment of inoperable, ulcerated, primary and recurrent tumors of the breast, vulva, rectum, abdominal incisions and ulcerated glandular metastases, in addition to the advanced basal cell type of carcinoma. These lesions are all larger than 5 cm. in diameter, averaging about 10 cm. Palliation and materially reducing the size of an unsightly process were the primary objectives. Bleeding from soft fungations and foul sloughs partially or completely subsided, concomitant with marked reductions in the size of the lesions. Regressions are usually phenomenally rapid, and the resulting wounds are relatively clean and compare favorably with an electrosurgical excision. The surface ulceration diminishes, probably owing to healing with ensuing tissue contracture, the result of an extensive fibrosis. Lesions from 5 to 6 cm. in diameter may show complete surface healing, a few of these cases being symptom free from four to five years. The limitations of dosage are proportionate to the thickness of the lesion. A slow rate of irradiation on the basis of small doses once a week has been found to be desirable and effective. An average period of from three to four weeks has afforded an opportunity to temporize a predetermined plan of treatment according to the response. This is a safeguard against excessive dosage, particularly with unusually sensitive lesions and inaccuracies in measuring the size of the growths. Long and short wavelength radiations should be combined for selected cases, particularly when experience justifies a reasonable outlook for a possible clinical cure.

American Review of Tuberculosis, New York

32: 481-616 (Nov.) 1935

Undergraduate Teaching of Tuberculosis. J. A. Miller, New York.—p. 481.
Involvement of Myocardium in Tuberculosis: Review of Literature and Report of Three Cases. H. Horn and O. Saphir, Chicago.—p. 492.
Juvenile Diabetes and Tuberculosis. A. L. Newcomb, Chicago.—p. 507.
Artificial Pneumothorax in Treatment of Lobar Pneumonia. T. Klein and V. L. Tuck, Philadelphia.—p. 511.
Intrapleural Pressure in Artificial Pneumothorax: Statistical Study of Range of Intrapleural Tension in Six Hundred and One Tuberculosis Patients. E. Bunta, Chicago.—p. 520.
*Destructive Phases of Induced Phrenic Paralysis in Pulmonary Tuberculosis with Cavity. P. Slavin, Glen Gardner, N. J.—p. 535.
An Improved Forceps for Operations on Phrenic Nerve. J. W. Cutler, Philadelphia.—p. 543.
Changes in Pathology of Pulmonary Tuberculosis as a Result of Treatment. H. C. Sweany, Chicago.—p. 544.
*Cultivation of Tubercle Bacilli from Blood of Tuberculous Persons. M. Siegel and Bella Singer, New York.—p. 563.
Tuberculous Bacillemia: Experimental Studies with Three Pathogenic Types of Tubercle Bacilli. H. J. Corper and C. B. Vidal, Denver.—p. 575.
Origin of Pulmonary Tubercles in Intrapulmonary Lymphoid Tissue. J. Zeyland, Poznań, Poland.—p. 588.
*Immunization of Guinea-Pigs with Heat-Killed and Formol-Killed Tubercle Bacilli. A. Branch and J. F. Enders, Boston.—p. 595.
Effects of Adding Various Substances to Suspensions of Tubercle Bacilli in Experimental Infection. C. B. Vidal, Denver.—p. 601.
Report of Eleven Hundred and Seventy Cutaneous Tests with Four Tuberculins. C. R. Howson, Los Angeles.—p. 604.
Whooping Cough in Tuberculous Children. J. I. Hershey and Frieda Ward, Eagleville, Pa.—p. 612.

Phrenic Paralysis in Pulmonary Tuberculosis with Cavity.—Slavin discusses the four groups of cavernous cases in which phrenic procedures lead to exacerbation of destructive processes: excavated exudative and large fibrocaseous lesions, large subpleural cavities, and cavities in advanced fibroid tuberculosis. Seven cases are described in which intended artificial pneumothorax was replaced by phrenic paralysis, because of failure to find a free pleural space. Though further enlargement of cavitation could be expected in those cases under treatment by rest alone, the sequence of events showed that paralysis of the diaphragm was responsible for additional damaging processes. Two of these cases with excavated exudative and large fibrocaseous lesions developed postoperative stagnation of sputum in the cavities and accelerated detachment of caseous tissue, resulting in a rapid spread of the cavitation and massive extension of disease. An air-filled portion of a cavity may become obscured after operation by retained sputum or by approximated adjacent infiltrated areas, the roentgenogram simulating postoperative obliteration of the cavity. In large subpleural cavities, phrenic paralysis causes impairment of drainage, leading to progressive destruction within the walls of the cavity. In cases with excavated advanced fibroid tuberculosis there may be a dangerous postoperative reduction of their depleted vital capacity. In all four groups, high elevation of a paralyzed diaphragm does not seem to diminish the untoward effect of the operation.

Tubercle Bacilli in Blood of Tuberculous Persons.—Siegel and Singer employed the Loewenstein method of culturing tubercle bacilli from the blood in 911 blood specimens from 422 tuberculous persons. There were six macroscopic positive cultures and fifty-five microscopic positive cultures. The macroscopic positive cultures were undoubted cultures of tubercle bacilli according to subculture and virulence tests. The microscopic positive cultures were not proved definitely to be cultures of tubercle bacilli, since subcultures and animal inoculations gave negative results. The primary macroscopic growths of tubercle bacilli from the blood of living tuberculous persons were scanty, usually only one or two colonies appearing from a sample of from 5 to 10 cc. of blood. The six macroscopic positive cultures were obtained from two infants with miliary tuberculosis, an adult critically ill with pulmonary and intestinal tuberculosis, an adult immediately after a first stage thoracoplasty operation, the umbilical blood of a tuberculous placenta and the postmortem heart's blood of a newborn infant who died three hours after birth with no evidence of tuberculous lesions. Hemoglobin did not seem to inhibit the growth of tubercle bacilli according to a comparative study of the Loewenstein method and the "whole blood" method. In this series of ninety-eight specimens from sixty-three tuberculous persons, there were three macroscopic positive cultures by the direct culture of whole citrated blood as compared with two macroscopic positive cultures and one microscopic positive culture by the use of Loewenstein's method.

Immunization of Guinea-Pigs with Tubercle Bacilli.—In their experiments Branch and Enders endeavored to determine whether or not there was a quantitative difference in the immunity obtained after vaccination by the intravenous, the intramuscular and the intraperitoneal routes; to compare the value of vaccines consisting of tubercle bacilli killed by heat at 65 C. and by the addition of formaldehyde, and to ascertain whether or not there appeared to be any correlation between the time of survival of an animal and the presence of the allergic state as denoted by a cutaneous response to the injection of tuberculin resulting from vaccination and existing previous to infection. The organisms used throughout were from month-old egg cultures of the virulent human strain H37. In accordance with the results of earlier observations, young cultures of virulent tubercle bacilli, killed by heat, have given satisfactory results as a prophylactic vaccine in guinea-pigs. The intramuscular route of administration of the vaccine proved more efficacious than the intravenous or intraperitoneal routes. Organisms killed by formaldehyde were no more effective than were heat-killed bacilli. It would seem advisable to continue to assay the protective value of vaccines of dead tubercle bacilli, killed by other methods than those described, in the hope of finding a still more efficacious dead vaccine, since certain disputed points with regard to the use of avirulent living tubercle bacilli as a vaccine have hindered the universal employment of this method in either animals or man. No correlation was found between the degree of skin-test reactivity of individual animals to tuberculin following vaccination before infection and their period of survival after infection (immunity).

Archives of Internal Medicine, Chicago

56: 1067-1300 (Dec.) 1935

*Appearance of Dengue-like Fever in Northern California. G. Cheney, San Francisco.—p. 1067.
*Hyperglycemia and Glycosuria Associated with Disease of Biliary Tract. H. Lande and H. Pollack, New York.—p. 1097.
Idiopathic Steatorrhea: Metabolic Study of Patient, with Reference to Utilization of Nitrogen and Fat. J. F. Weir and Mildred Adams, Rochester, Minn.—p. 1109.
Tularemia: Report of Three Fatal Cases with Autopsies. A. Bernstein, Baltimore.—p. 1117.
Acute, Subacute and Chronic Isolated Myocarditis: Report of Case. M. A. Simon and S. Wolpaw, Cleveland.—p. 1136.
*Cancer as Problem in Metabolism. H. H. Beard, New Orleans.—p. 1143.
Bacteriology of Normal and Diseased Gallbladders. E. Andrews and Lucy Dell Henry, Chicago.—p. 1171.
Pathology of Vessels of Pulmonary Circulation: Part V. O. Brenner, Birmingham, England.—p. 1189.
Effect of Theophylline Ethylenediamine on Experimentally Induced Cardiac Infarction in Dog. W. M. Fowler, H. M. Hurevitz and F. M. Smith, Iowa City.—p. 1242.
*Theophylline in Treatment of Disease of Coronary Arteries. F. M. Smith, Iowa City; H. W. Rathe, Waverly, Iowa, and W. D. Paul, Iowa City.—p. 1250.
Carbohydrate Intolerance and Intestinal Flora: I. Clinical Study Based on Sixty Cases. T. L. Althausen, J. B. Gunnison, M. S. Marshall and S. J. Shipman, San Francisco.—p. 1263.
Review of Neuropsychiatry. S. Cobb, Boston.—p. 1287.

Dengue-like Fever in Northern California.—During the summer of 1934 Cheney observed in San Francisco six cases of high, usually biphasic, fever averaging a week in duration and not accompanied by symptoms of involvement of the upper portion of the respiratory tract or leukocytosis. They appear to represent a disease entity new in northern California. The clinical changes in these six cases and in four other cases produced by inoculation with whole blood are practically identical with those of dengue. The incidence of complications was higher than is usual in dengue, but their nature is the same. This may be explained on the ground that the local population is less resistant to this type of infection. However, as dengue commonly makes its appearance in a new field in the form of a widespread epidemic and as the only known vector is the mosquito Aedes aegypti, which has never been observed in California, the disease in these cases cannot positively be diagnosed as dengue. Also it has not been shown that the infective agent in these cases was truly a filtrable virus, and it has not been possible to show whether an immunity to dengue developed

after the attack. Under these circumstances it seems wise to classify this type of febrile disorder as "dengue-like," although all the clinical evidence points toward its being dengue. If this fever recurs next summer, its exact status may be determined accurately.

Glycosuria Associated with Disease of Biliary Tract.—Lande and Pollack cite three cases in each of which there was a direct correlation between the disturbance of carbohydrate metabolism and the degree of impairment of hepatic function. Not only did the restoration of normal function of the liver by adequate biliary drainage result in the disappearance of the diabetic manifestations, but the ingestion of dextrose was followed by normal values for sugar tolerance. They explain the disturbance of carbohydrate metabolism in their three patients on the basis of a disturbance of the function of the liver as a blood sugar regulating mechanism. Studies on the respiratory quotient should be carried out to determine whether there is actual impairment of the ability of these patients to oxidize dextrose. The restoration of the normal value for dextrose tolerance is a criterion for differential diagnosis. Each of the patients was seen during his first attack of disease of the biliary tract. It is possible that repeated or prolonged attacks of disease of the biliary tract might produce permanent damage to the mechanisms regulating the blood sugar. It seems reasonable to the authors, especially in the light of recent experimental evidence, to assume that a disturbance of carbohydrate metabolism with complete restoration following biliary drainage as in their three cases may be interpreted on the basis of hepatic dysfunction.

Cancer as Problem in Metabolism.—Beard reviews cancer as a problem in metabolism under the following headings: carbohydrate metabolism of tumors, lipoid metabolism and cholesterol, irradiation and carcinoma of the skin and the carcinogenic hydrocarbons. Endocrine imbalance in the pathogenesis of some types of cancer is reviewed under estrogenic substance; prolan; extracts of testicle, spleen, thymus and parathyroid; insulin, and extracts of adrenal cortex. He believes that the following concepts are worthy of consideration by students of the problem: 1. In malignant tumors the metabolism of carbohydrate is abnormal, resulting in low respiration and high glycolysis. 2. Lipoids and cholesterol are definitely increased, the latter especially in carcinoma of the skin. 3. Massive doses of ultraviolet radiation may produce cancerous lesions about the eyes, ears and head of the experimental animal. 4. Hydrocarbons containing the phenanthrene group and estrogenic substance are both carcinogenic and estrogenic. 5. The chemical relationship of the bile acids, sterols, sex hormones and carcinogenic hydrocarbons is established. 6. Injections of gonadotropic substance may inhibit the growth of some types of tumors. 7. Extracts of adrenal cortex, thymus and spleen and insulin may also have a retarding influence on some types of experimental tumors. The relation of sulfhydryl to the problem of cancer is discussed.

Theophylline in Treatment of Disease of Coronary Arteries.—Smith and his associates believe that the preparations of theophylline are among the most effective remedies in the treatment of congestive failure due to disease of the coronary arteries. The action is prompt and generally evident in all cases in which it is possible to restore the cardiac function, provided the work of the heart is reduced to the minimum through absolute rest in bed, relaxation and sleep. Theophylline, generally in the form of theophylline ethylenediamine, 1½ grains (0.1 Gm.) after meals, is continued after the patient leaves the hospital. The results in 100 cases of paroxysmal dyspnea, angina on effort and occlusion of the coronary arteries in which treatment was administered outside the hospital are in general accord with what might be expected from the experimental study. Questionable results and failures are encountered, but this is to be expected in the more advanced forms of the disease. Theophylline should be prescribed as soon as the diagnosis of disease of the coronary arteries is established, and its administration should be continued for a long period in order to insure the maximal benefit from the medication. It should be remembered, however, that this constitutes only one measure in the treatment and, except for experimental purposes, should not be employed to the exclusion of other established means of restoring the cardiac function.

Archives of Otolaryngology, Chicago

22: 659-786 (Dec.) 1935

Suppuration of Petrous Pyramid. I. Friesner, J. G. Druss, H. Rosenwasser and S. Rosen, New York.—p. 659.

Regeneration of Nasal Mucosa. L. R. Boling, St. Louis.—p. 689.

Mixed Tumor of Retrotonsillar Space: Report of Case. A. H. Persky, Philadelphia.—p. 725.

Effect of Physical Agents on Temperature of Nasal Sinuses. H. K. Tebbutt Jr., Albany, N. Y.—p. 733.

Chronic Tonsillitis in the Adult: Clinical, Bacteriologic and Pathologic Study. T. N. Hunnicutt Jr., H. J. Sternstein and H. E. MacMahon, Boston.—p. 744.

Archives of Surgery, Chicago

31: 851-1042 (Dec.) 1935

*Palliative Irradiation of Gastric Cancer. G. T. Pack, Isabel M. Scharnagel, Edith H. Quimby and Marion C. Loizeaux, New York.—p. 851.

Fractures of Base of Radius in Adults. N. W. Cornell, New York.—p. 897.

*Surgical and Anesthetic Risk in Cardiac Disease. J. Hickman, H. Livingstone and M. E. Davies, Chicago.—p. 917.

*Surgical Treatment of Carcinoma of Head of Pancreas and of Ampulla of Vater. E. S. Judd and M. T. Hoerner, Rochester, Minn.—p. 937.

Urinary Calculi in Bone Diseases: Review of Literature and Report of Cases. A. E. Goldstein and B. S. Abeshouse, Baltimore.—p. 943.

Chronic Nonspecific Thyroiditis. J. G. Lee, New York.—p. 982.

Review of Urologic Surgery. A. J. Scholl, Los Angeles; E. S. Judd, Rochester, Minn.; J. Verbrugge, Antwerp, Belgium; A. B. Hepler, Seattle; R. Gutierrez, New York, and V. J. O'Conor, Chicago.—p. 1013.

Palliative Irradiation of Gastric Cancer.—Pack and his associates employed radiation therapy in an attempt to afford palliation to sixty patients with advanced inoperable cancers of the stomach. The majority of lesions were situated in the proximal half of the stomach. With the exception of one case, these experiments have been conducted during the last three years. One patient with gastric lymphosarcoma is living and well six years after radiation treatment. Another patient is in good health three years following irradiation of a carcinoma of the stomach, and two others are without evidence of gastric cancer after an interval of two years. Palliative results are difficult to evaluate, but at least six patients have benefited greatly from these treatments only to succumb later to recurrent activity of residual cancer or to distant metastases. One middle-aged woman with a bulky carcinoma on the greater curvature of the fundus lived comfortably for twenty months and gained 45 pounds (20.4 Kg.) in weight; then generalized carcinomatosis developed, which caused her death three months later. A man of 40 with a cacinoma occluding the cardiac orifice was able to engage in manual labor for one and one-half years following radiation therapy; he subsequently died of repeated gastric hemorrhages. Radiation therapy, however administered, offers little hope for cure to the patient with gastric cancer. The justification for a trial of irradiation is the hope that the cancer may fall into the infrequent group of radiosensitive tumors, which must constitute less than 10 per cent of all gastric cancers. The occasional palliation is more frequent than the apparent cures. Whatever advantages or benefits have occurred to any of these sixty patients are over and above what could have been given them by surgical measures, by the very definition of the term inoperable. Radiation therapy is not proposed as a substitute for surgical treatment of operable gastric cancer.

Surgical Risk in Cardiac Disease.—Hickman and his collaborators made a study of the postoperative course in 336 patients with cardiac disease who came to the operating room during a period of two years. Since there were only six deaths due to cardiac disease and two deaths due to pulmonary disease related to the surgical intervention and anesthesia in the 336 patients who underwent 345 operations, the resulting mortality of 2 per cent indicates that as a group patients with cardiac disease are fairly good surgical risks. Angina pectoris, coronary occlusion, decompensation, hypertension and thyrotoxic heart disease are, in the order named, the most serious diseases with which one has to deal. Contrary to the belief of several authors, inhalation anesthesia, particularly ethylene-oxygen anesthesia, is safe when a high percentage of oxygen is used and asphyxia or struggling is avoided. Ethylene-oxygen and local anesthesia gave the most

satisfactory results in the authors' cases. The use of spinal, ether or nitrous oxide-oxygen anesthesia increased the incidence of postoperative complications and deaths.

Surgical Treatment of Carcinoma of Head of Pancreas.—Judd and Hoerner performed a palliative operation in fourteen of twenty-one cases of carcinoma of the ampulla of Vater at the Mayo Clinic. Cholecystogastrostomy was performed twelve times and cholecystoduodenostomy and choledochoduodenostomy once each. Four of the patients did not recover from the operation, but the average postoperative life of those who did was 13.9 months. In the seven remaining cases in this group the lesion appeared to be amenable to complete extirpation. Consequently, resection of the ampulla of Vater together with the tumor was carried out. Four of the five patients who survived the operation were completely relieved of their symptoms and lived for one year and three months, two years and two months, two years and two months and three years, respectively. One patient was not traced. For the sake of comparison, the authors selected 158 cases of carcinoma of the head of the pancreas, a condition closely related to malignant lesions of the ampulla of Vater. Some form of anastomosis between the biliary tract and the intestine was performed in these cases. In sixty-four cases the differentiation of carcinoma and chronic pancreatitis could not be made with certainty, although in the opinion of the surgeon a malignant condition was the more likely in the majority of cases. The mortality at the hospital for this series of palliative operations was high. The patients who survived the operation, however, were relieved of their most troublesome symptoms, pain, jaundice, pruritus and episodes of chills and fever, except in a very few instances. Only 4 per cent of the surviving patients derived no benefit from the operation. These patients were the ones in whom the carcinoma was farthest advanced at the time of operation, and most of them died within three months after the procedure. The average length of life after leaving the hospital for the patients with verified carcinoma of the head of the pancreas was 10.2 months. The patients in whom carcinoma of the head of the pancreas and chronic pancreatitis could not definitely be distinguished lived, on an average, 11.9 months. The discrepancy between these figures could be accounted for by the inclusion in the latter group of several patients with simple pancreatitis. That some patients with a questionable diagnosis did survive from three to six and a half years lends weight to this opinion. Nevertheless, the number of incorrect diagnoses in a large series of cases is relatively few, for the surgeon can form a rather accurate opinion of the condition with which he is dealing but is restrained from offering a dogmatic statement because a specimen for biopsy was not taken.

Bulletin of Neurol. Inst. of New York, New York

4: 221-402 (Oct.) 1935

*Congenital Tumors in Rostral Portion of Third Ventricle: Their Diagnosis by Encephalography and Ventriculography. L. M. Davidoff and C. G. Dyke, New York.—p. 221.
Sense of Smell: V. Relative Importance of Volume and Pressure of Impulse for Sensation of Smell and Nature of Olfactory Process. C. A. Elsberg, E. D. Brewer and I. Levy, New York.—p. 264.
Id.: VI. Trigeminal Effects of Odorous Substances. C. A. Elsberg, I. Levy and E. D. Brewer, New York.—p. 270.
Id.: VII. Odorous Substances to Be Used for Tests of Olfactory Sense. C. A. Elsberg, E. D. Brewer and I. Levy, New York.—p. 286.
Cavum Septi Pellucidi and Cavum Vergae. A. Wolf and T. E. Bamford, New York.—p. 294.
Syndrome of Adenoma of Pancreas. L. Feinier, S. E. Soltz and P. Haun, with technical assistance of Thelma Robinson, New York—p. 310.
Central Fissure of Human Cerebrum. J. Rosett, New York.—p. 365.
*Method of Accurately Determining Vertebrae to Be Exposed During Laminectomy. H. K. Bondar, New York.—p. 399.

Congenital Tumors in Third Ventricle.—Davidoff and Dyke present nine cases of congenital tumors within the third ventricle that were diagnosed by encephalography or ventriculography and confirmed at operation and by histologic examination. The positive data in the encephalogram which indicate a tumor within the anterior portion of the third ventricle are: usually symmetrical dilatation of the lateral ventricles which are in their normal position, filling defect in the anterior portion of the third ventricle, a concave or straight margin to the anterior border of the air caudal to the filling defect, normal sized or slightly dilated aqueduct of Sylvius and fourth ventricle if visualized, incomplete filling or deformity of the cisternae interpeduncularis and pontis and dorsal displacement of the medial cerebral sulci. In ventriculograms the positive data, when a single puncture is done, are the failure of air to pass at all or with difficulty into the other lateral or third ventricle, the deviation of the septum pellucidum to either side, the presence of a filling defect in the anterior portion of the third ventricle and a concave or straight margin to the anterior border of the air caudal to the filling defect, and, when a double puncture is done, bilateral symmetrical dilatation of the lateral ventricles which are situated in their normal position, cutting off of the air shadow in the foramen of Monro, a filling defect in the anterior portion of the third ventricle and a concave or straight margin to the anterior border of the air caudal to the filling defect. A defect in the septum pellucidum can be diagnosed by the absence of the shadow of the septum in the anteroposterior view and a fusion of the lateral ventricles across the midline.

Method of Determining Vertebrae to Be Exposed During Laminectomy.—Bondar describes a procedure devised by Elsberg, by which an accurate determination of the vertebral arches is possible. A tattoo mark is made opposite one spinous process and a roentgenogram of the spine taken after a small lead arrow marker has been placed exactly opposite the tattoo mark. One or more days before the operation the patient is placed in the prone position. A spinous process at approximately the site of the disease is selected. At this level, but at a point from 1 to 2 cm. from the midline, an intradermal injection of a drop of indigo carmine is made, or a drop of the dye is placed on the skin and a puncture through the dye is made into the skin with a fine needle. The lead arrow marker is placed over the tattoo spot with the point toward the midline and is held in place with adhesive plaster. An anteroposterior roentgenogram of the spine is then taken, and the exact location of the tattoo spot relative to the vertebrae is determined. The tattoo mark may readily be seen throughout the course of the operation, and by means of it, through its correlation with the lead arrow and the roentgenologist's report, the surgeon can at all times know the vertebra with which he is dealing.

Illinois Medical Journal, Chicago

68: 477-560 (Dec.) 1935

Influence of Ionization on Vasomotor Rhinitis: Clinical and Experimental Studies. A. R. Hollender and M. Gorin, Chicago.—p. 493.
Massive Collapse (Postoperative Massive Atelectasis). R. J. Maier, Chicago.—p. 498.
*Clinical View of Bone Marrow Depression. E. M. Stevenson, Bloomington.—p. 505.
Tracheotomy: Indications; Technic; Postoperative Management. R. D. Russell, Chicago.—p. 508.
Present Status of Surgery of Sympathetic Nervous System. G. de Takáts, Chicago.—p. 512.
Acute Metastatic Spinal Epidural Abscess: Two Cases. D. Stanley, Decatur.—p. 515.
What Shall We Do with the Unhealthy Cervix? G. H. Gardner, Chicago.—p. 517.
Surgical Treatment of Glaucoma. S. J. Meyer, Chicago.—p. 520.
Tonsillectomy in Pulmonary Tuberculosis. S. Broadwell, Springfield.—p. 526.
Organized Medicine Must Direct Medical Activities of America. Special Committee composed of Fitz-Patrick, Hayden, White, Brooks, Geiger, Griffin, H. McKenna, Steinhoff, Levisohn and Parkes.—p. 528.
Adequate Treatment of Early Syphilis. S. J. Zakon and M. Dorne, Chicago.—p. 533.
Congenital Absence of Left Tube and Ovary: Report of Case. C. P White, Kewanee.—p. 536.
Malignant Hypertension. T. M. Smith, Chicago.—p. 539.
Principles of Excretory Urography in Urologic Diagnosis. N. J Heckel, Chicago.—p. 542.
Acute Abdominal Pain in Juvenile Diabetes Mellitus. A. L. Newcomb, Chicago.—p. 544.
Codeine Dermatitis. B. Skorodin, Manteno.—p. 546.
Experimental Study on Pyloric Mechanism. C. Gianturco, Urbana.—p. 547.
Contribution to Whooping Cough Immunization. C. E. Sibilsky, Peoria.—p. 549.
Psychosis Associated with Infectious Diseases. B. Lemchen, Chicago.—p. 553.

Clinical View of Bone Marrow Depression.—From clinical observation Stevenson has noted that infection is an associated factor in granulocytopenia. Drug ingestion may be associated with granulocytopenia, but there are cases in which

no history of drug ingestion can be obtained. In a series of cases of bone marrow depression, all proved cases of granulocytopenia, he has noted that, while drug ingestion over a long period of time may have been a causative factor in some cases, there are other cases in which no drugs were taken at any time or were taken only at the onset of illness. Even in the cases in which there has been a history of drug ingestion prior to the onset of the granulocytopenia, it is reasonable to assume that the drugs were taken in the hope of relieving symptoms arising from some previously existing condition. He selected six cases, supported by current literature, that suggest to him that granulocytopenia is a disease entity of bone marrow depression which may be precipitated but not caused by infection or drugs. This bone marrow depression may be an individual characteristic in a subject who retains a form of the juvenile type of bone marrow in adult life. Either his total white count remains comparatively low or his granulocytes, as found in the juvenile, are relatively low in number. In an individual so constituted, bone marrow depression may occur which in another individual with a normal bone marrow would have but little, if any, effect. It seems reasonable to assume that in such an individual bone marrow depression can easily be precipitated by infection, drugs or any other outside stimulus which in a normal individual produces no unusual bone marrow response; that either the infection was superimposed on an abnormal bone marrow or produced an abnormal response in a juvenile bone marrow; that drugs taken over a long period of time are most likely taken for relief of symptoms existing long before the onset of and not the cause of granulocytopenia.

Journal of Allergy, St. Louis

7: 1-100 (Nov.) 1935

*Experiments to Determine Whether Allergically Active Substance in Ragweed Pollen Extract Is a Single Entity or Multiple. A. H. W. Caulfeild, M. H. Brown and E. T. Waters, Toronto.—p. 1.

*Local Serum Sickness in Man Following Intracutaneous Injection of Small Amounts of Antiserums. Beatrice Carrier Seegal, Devorah Khorazo and Julia Mehlman, New York.—p. 27.

Pertinent Factors Influencing Comparative Skin Tests on Arm. Katherine L. Bowman, Brooklyn.—p. 39.

Trichophytin and Monilia Extracts in Allergic Dermatoses: Report of Cases. Edna S. Pennington, Nashville, Tenn.—p. 54.

Is There an Increased Suspension Stability of Erythrocytes in Allergic Disease? R. V. Ellis, Minneapolis.—p. 64.

Buckwheat Sensitivity. G. I. Blumstein, Philadelphia.—p. 74.

Pollen Survey in Pittsburgh, Pennsylvania, 1934. E. B. Scott, L. H. Criep and M. A. Green, Pittsburgh.—p. 80.

Active Substance in Ragweed Pollen Extract.—By means of the Prausnitz-Küstner reaction and an in vitro absorption modification of this reaction, Caulfeild and his associates have shown that there is more than one allergically active substance in ragweed pollen solution and further that there is more than one specific reagin in the serum of the ragweed hay fever individual. By the same tests they found that the part played by one allergically active substance varies considerably in different patients, as judged by the quantitative amount of the different specifically active reagins present in the serum of each patient.

Local Serum Sickness.—The production of local serum reaction suggested itself to Seegal and her collaborators as a possible method for carrying out a comparative study of the ability of a number of foreign serums to produce serum sickness in man. Serums were chosen from four species of animals that had received immunizing injections of a bacterial antigen. Purified antibody solutions (globulin fraction of serum) from two of the animal species also were used. Injections of 0.1 cc. of undiluted immune serum were given intracutaneously in the forearm. Local serum sickness characterized by wheals, erythema and itching occurred. 1. Horse antipneumococcus type I serum produced a severe, protracted local serum sickness in eight of the twelve individuals tested. 2. Sheep hemolytic antistreptococcus serum produced a severe reaction in nine of the subjects and a slight reaction in one. 3. Rabbit antipneumococcus type I serum produced a slight local reaction in only one individual. 4. Bovine diphtheria antitoxin serum produced a strong reaction in two and a moderate or slight reaction in six. 5. Equine tetanus antitoxin globulin elicited only two moderate and three slight reactions. 6. Bovine tetanus antitoxin globulin produced the mildest possible reaction in three individuals. It is possible that the local serum sickness reaction may be helpful in studying the tendency of a therapeutic serum to produce serum sickness.

Journal of Immunology, Baltimore

29: 343-426 (Nov.) 1935

Studies on Chemical Nature of Shwartzman-Active Substances. K. Apitz, Boston.—p. 343.

Agglutinins and Conditioned Reflex. L. M. Kopeloff, N. Kopeloff and E. Posselt, New York.—p. 359.

Schick Reactions and Serum Antitoxin Titrations on Children Injected with Diphtheria Formol Toxoid. C. N. Leach, New York, and G. Pöch, Eisenstadt, Austria.—p. 367.

Serologic Tests with Amino Acids. J. Van Der Scheer and K. Landsteiner, New York.—p. 371.

Neutralization of Bacteriophage. C. E. Clifton, Elizabeth Mueller and W. Rogers, San Francisco.—p. 377.

Procedure and Apparatus for Preservation in "Lyophile" Form of Serum and Other Biologic Substances. E. W. Flosdorf and S. Mudd, Philadelphia.—p. 389.

Journal of Infectious Diseases, Chicago

57: 223-346 (Nov.-Dec.) 1935

Duration of Demonstrable Antibodies in Serum of Rabbits Immunized with Heat Killed Type II and Type III Pneumococci. E. G. Stillman, New York.—p. 223.

Reaction of Partially Immunized Rabbits to Inhalation of Type I Pneumococci. E. G. Stillman and R. Z. Schulz, New York.—p. 233.

Reaction of Normal and Partially Immunized Rabbits to Intranasal Instillation of Type I Pneumococci. E. G. Stillman and R. Z. Schulz, New York.—p. 238.

Effect of Bacterial Numbers on Minimal Bacteriostatic Concentrations. L. P. Garrod, London, England.—p. 247.

*Presence of Typhus Virus in Wild Rats in New York City. Clara Nigg, New York.—p. 252.

Cryptococci: Their Identification by Morphology and by Serology. Rhoda W. Benham, New York.—p. 255.

The Dissociation of Clostridium Welchii. F. A. Stevens, New York.—p. 275.

Virulence of Haemophilus Pertussis. J. A. Toomey, Katherine Ranta and W. S. Takacs, Cleveland.—p. 286.

*Complement Fixation in Blastomycosis. D. S. Martin, Durham, N. C.—p. 291.

Intestinal Flora of Monkeys and Dogs During Digestion and Following Direct Introduction of Food Substances into Cecum and into Isolated Segments of Bowel. Elizabeth Petran, Chicago.—p. 296.

Malarial Parasite Infecting All Blood and Blood-Forming Cells of Birds. C. G. Huff and W. Bloom, Chicago.—p. 315.

Specificness of Negative Phase in Precipitin Production. L. Hektoen and W. H. Welker, Chicago.—p. 337.

Typhus Virus in Wild Rats in New York City.—Nigg obtained fifty-one wild rats from the metropolitan area of New York City during the months of September to December inclusive. Of the fifty-one rats, sixteen showed weakly positive Weil-Felix reactions, nine with traces of agglutination in 1:10 dilution, five in 1:20 and two in 1:40. The brain of each of these sixteen rats was emulsified and injected into two guinea-pigs, one fifth and one tenth of the brain respectively being used for intraperitoneal inoculation. In no case was typhus virus recovered and none of the thirty-two guinea-pigs injected from these sixteen rats developed a febrile reaction, but, when subsequently tested with a laboratory strain of typhus, five showed what perhaps might be a certain degree of immunity. Although typhus virus was not actually recovered from the rats, the finding of what appeared to be a more or less marked immunizing effect following the injection of brain from rats that showed weak Weil-Felix reactions may possibly indicate previous typhus infection in such rats. The examination of a larger number of rats obtained from different localities during all seasons of the year seem indicated.

Complement Fixation in Blastomycosis.—Martin describes a complement fixation test in blastomycosis. A saline suspension of blastomycetes is used as the antigen. In all other details the procedure is the same as that used in routine Wassermann tests. Five strains of blastomycetes isolated from five cases of blastomycosis were similar morphologically, culturally and serologically. Complement fixing antibodies in easily detectable quantities were present in the serum of three patients with generalized blastomycosis. No detectable antibodies were found in one patient with the disease. Serum from seventy-eight control cases contained no complement fixing antibodies for these organisms. Two serums containing complement fixing

antibodies for blastomycetes contained no demonstrable antibodies for Sporotrichum, Geotrichum, Monilia albicans, Monilia candida, Coccidioides immitis, Mycoderma cutaneum or Histoplasma capsulatum. There is no relation between the clinical condition of the patient and the presence of complement fixing antibodies in the circulating blood. A positive complement fixation test with a 1:4 dilution of the patient's serum is diagnostic of the disease. A negative complement fixation test does not exclude infection with blastomycetes.

Journal of Lab. and Clinical Medicine, St. Louis

21: 111-224 (Nov.) 1935

Bacteriologic Studies on Fecal Streptococci and Lactic Acid Streptococci. A. L. Kleckner, Philadelphia.—p. 111.
*Quinine Test for Hyperthyroidism. I. Bram, Philadelphia.—p. 123.
Congenital Thinning of Wall of Right Anterior Aortic Sinus of Valsalva: Anterior Interventricular Septal Defect (Probably Bulbar Septal), Slight Dextroposition of Aorta and Bacterial Endocarditis. V. Sprenkel and H. L. Stewart, Philadelphia.—p. 128.
Studies on Anthrax: Clinical Report of Ten Human Cases. H. Gold, Chester, Pa.—p. 134.
Incidence of Nondiabetic Glycosuria. B. Y. Glassberg, St. Louis.—p. 152.
Chemical Study of Alum Diphtheria Toxoid Precipitate. E. Buxbaum and C. K. Greenwald, New York.—p. 157.
Morphologic Sugar Metabolism in Human Leukocyte Culture. G. Wallbach, Berlin, Germany.—p. 163.
Neufeld Reaction in Certain Cases of Pneumococcic Septicemia. Sara A. Scudder, New York.—p. 168.
The Doctor as Contributor to Civilization. E. Podolsky, Brooklyn.—p. 169.
Hematologic Nomenclature: Teknocyte and Korocyte Suggested in Emendation of the Designations "Juvenile" and "Stab" in Schilling Hemogram. A. P. Hitchens, Washington, D. C.—p. 173.
*New Method for Determination of Cutaneous Capillary Blood Pressure. J. P. Baumberger and Kathleen Bardwell, Stanford University, Calif.—p. 179.
Limitations of Colorimetric Analyses by Present Methods. E. L. Armstrong, Erie, Pa., and M. L. Kuder, Washington, D. C.—p. 181.
Iodized Oil: Practical Method of Preparation. R. M. Balyeat, L. E. Seyler and V. Outhier, Oklahoma City.—p. 187.
Method of Eliminating Blastocystis Hominis from Cultures of Endamoeba Histolytica. W. S. Stone, Washington, D. C.—p. 190.
Method of Estimating Both Basal and Exercise Cardiac Output on Dogs. W. V. Cox, J. W. Hawkins and H. F. Robertson, Boston.—p. 192.
Automatically Recording Colony Counting Apparatus. P. L. Varney, St. Louis.—p. 207.
*Chemical Diagnosis of Pregnancy by Detection of Estrin in Urine. M. J. Schmulovitz and H. B. Wylie, Baltimore.—p. 210.

Quinine Test for Hyperthyroidism.—Bram states that from his observations in a series of more than 4,000 cases it appears that the quinine test for thyrotoxemia is a dependable guide in diagnosis, the frequency of error not exceeding 5 per cent. As with basal metabolic studies, the test does not discriminate between toxic adenoma and exophthalmic goiter. The tolerance for quinine in hyperthyroidism appears to vary in direct proportion with the height of the basal metabolism rate and is fairly parallel with it, serving as a guide in progress under treatment. Depending on the severity of active hyperthyroidism, patients are capable of taking 30 grains (2 Gm.) or more of quinine sulfate or hydrobromide daily for weeks without evidence of cinchonism. In the occasional instance of a quinine-negative subject who presented an otherwise typical case of exophthalmic goiter, it was discovered that the author was dealing with an uncommon case of exophthalmic goiter, apparently without the element of hyperthyroidism. In these patients, despite nervousness, sweating, wasting, exophthalmos, heart hurry and trembling, the basal metabolic rate remained within normal limits. The quinine test is as dependable as the basal metabolic rate and as accurate a guide in treatment; it has the advantage of requiring no costly apparatus in its performance, nor does it require "basal conditions" of starvation and rest.

Cutaneous Capillary Blood Pressure.—Baumberger and Bardwell state that their method, while direct, is suitable only for research purposes. The method has yielded results comparable to those of Carrier and Rehberg, which have been obtained by students as well as by trained investigators. The instrument consists of an arm hinged at one end to an upright and bearing a small glass bead on the other end. The arm is bent downward at right angles to carry the bead. In operation the glass bead is applied to the skin by a sliding weight on the calibrated arm. The skin surface is moved at a moderate speed, with the glass ball riding over the skin. When the skin surface itself cannot be moved easily, the ball may be made to make excursions back and forth by having the fulcrum of the lever on a ratchet and pinion. If a white flash appears as the ball passes by, the weight is moved nearer the fulcrum until the pink color of the skin is undisturbed by the weights. The actual surface of the ball that makes contact is determined by noting the diameter of the ink spot on the ball after application to the ink-smeared skin. This area divided into the pressure, calculated by the law of levers, gives a value convertible into millimeters of mercury. The method avoids the danger of stasis and gives a statistical average surface that is constant. The adjustment of pressure is convenient and accurate. The importance of determination of capillary blood pressure in clinical work may be expected to increase. Already this measurement is of importance in urticaria, inflammation, circulatory shock, edema, and the like.

Pregnancy and the Detection of Estrogenic Substance in Urine.—During the course of an investigation of the phenol excretion in pregnancy, Schmulovitz and Wylie devised a short method of chemically detecting estrogenic substance in the urine of pregnant women. The method consists in the extraction of the substance from the urine with ether and its detection by coupling with diazotized paranitro-aniline (the color reagent) to form a deep colored azo dye, a reaction first noted by Harington and Schüpbach. The term estrogenic substance used by the authors includes theelin (ketohydroxyestrin) and theelol (trihydroxyestrin) and is synonymous with female sex hormone, folliculin, menformon and progynon. The composition of the reagents employed, the preparation of paranitrodiazonium chloride solution, the method and principles are given. Results obtained with the method in eighty-nine urinalyses of fifty-six patients suggest that it may be used for the chemical diagnosis of pregnancy.

Journal of Nervous and Mental Disease, New York

82: 613-740 (Dec.) 1935

Paraphasic Signs in Diffuse Lesions of the Brain. F. J. Curran and P. Schilder, New York.—p. 613.
John Hughlings Jackson. F. Kennedy, New York.—p. 637.
The Handicap of the Patient's Fears. O. H. P. Pepper, Philadelphia.—p. 639.
*New Treatment of Cerebral Hemorrhage and of Its Effects. R. Colella and G. Pizzillo, Palermo, Italy.—p. 652.
Avertin and Encephalography: Preliminary Report. J. E. Scarff, New York.—p. 660.

Treatment of Cerebral Hemorrhage.—Colella and Pizzillo have influenced the focus of cerebral hemorrhage and corrected its effects to a considerable degree, and sometimes even totally, by intramuscular autohemotherapy in thirty-five instances. The operation consists in drawing from 25 to 30 cc. of blood from a vein and immediately reinjecting it deeply into the gluteal region of the sound side. Before puncturing the vein, it is advisable to draw a few cubic centimeters of a 25 per cent solution of sodium citrate into the syringe in order to prevent a premature coagulation of the blood. The intramuscular autohemotherapic injections are hemostatic and useful for curing cerebral hemorrhage. The beneficial effect varies in degree but is constant. Recovery is observed even in the most acute cases, especially in those of traumatisms of the head, in which a genuine cerebral hemorrhage is encountered. The effects will be the better, the sooner curative intervention is attempted. Autohemotherapy helps to cure cerebral hemorrhage before, during and after the attack. It is most indicated as a preventive in cases of arterial hypertension with predisposing hereditary conditions, for arteriosclerotic patients who often preannounce the attack by vertigo, debility of limbs and unilateral tremor of the extremities. These effects are avoided and immediately corrected after the injection, which decreases intracranial blood pressure rapidly. The blood injection allows a differential diagnosis between real cerebral hemorrhage and cerebral softening. Although cerebral hemorrhage is much more frequent than softening and the symptoms are often identical, they may be distinguished because the curative effect is high with foci of cerebral hemorrhage and nil with cases of cerebral softening.

Kentucky Medical Journal, Bowling Green

33: 565-610 (Dec.) 1935

Radiography in Obstetrics. R. P. Ball, Chattanooga, Tenn.—p. 571.
Hypothyroidism Without Myxedema. C. H. Fortune, Lexington.—p. 575.
Infantile Paralysis: Report of Case Treated with Rosenow Serum. J. G. Carpenter, Stanford.—p. 579.
Diabetes: Complications of Diabetes. A. C. McCarty, Louisville.—p. 580.
Id.: Diagnosis of Diabetes. A. D. Kennedy, Louisville.—p. 582.
Id.: Diet and Insulin. S. A. Overstreet, Louisville.—p. 584.
Id.: Diabetic Surgery. M. Thompson, Louisville.—p. 586.
Ocular Headaches. W. S. Snyder, Frankfort.—p. 589.
Chronic Constipation: Notes on Etiology and Treatment. R. C. Alley, Lexington.—p. 590.
Management of Acute Head Injuries. C. Pilcher, Nashville, Tenn.—p. 592.
Hyperparathyroidism. C. E. Gaupin, Louisville.—p.597.

Minnesota Medicine, St. Paul

18: 761-826 (Dec.) 1935

Some of the Newer Developments in Hyperthyroidism and Hyperparathyroidism. F. H. Lahey, Boston.—p. 761.
Simplified Obstetric Care. E. D. Plass, Iowa City.—p. 768.
Present Status of Clinical Allergy. H. L. Alexander, St. Louis.—p. 773.
*Continuous Intravenous Infusion: Consideration of Its Possible Dangers. T. G. Orr, Kansas City, Kan.—p. 778.
Phenolphthalein Eruptions. C. W. Laymon, Minneapolis.—p. 782.
External Fronto-Ethmosphenoid Operation: Critical Review of the Literature and Details of Technic in Use at the Mayo Clinic. H. I. Lillie and H. L. Williams, Rochester.—p. 786.
Radium Treatment of Nonmalignant Conditions. R. E. Fricke, Rochester.—p. 789.
Pyrethrum in Treatment of Scabies. S. E. Sweitzer and J. W. Tedder, Minneapolis.—p. 793.

Continuous Intravenous Infusion.—The chief dangers in intravenous therapy that Orr warns against are reactions with chills and fever, overburdening of the circulating system by a rapid increase in blood volume, production of general edema and edema of the lungs, kidney irritation with blood in the urine, and thrombosis at the site of intravenous injection with embolism. He suggests that, as a safety factor, the use of continuous infusions be discontinued as a routine method. The intermittent method of giving fluid, dextrose and sodium chloride by vein reduces the tendency to give too much fluid and lessens the likelihood of thrombosis and embolism. Hypodermoclysis is a safer method of giving fluid than continuous phleboclysis.

New England Journal of Medicine, Boston

213: 1109-1158 (Dec. 5) 1935

Cancer of Larynx: Study of Two Hundred and Two Cases with End Results. S. W. Garfin, Boston.—p. 1109.
Giant Diverticula or Reduplications of Intestinal Tract: Report of Three Cases. H. W. Hudson Jr., Brookline, Mass.—p. 1123.
Diabetes Insipidus: Treatment with Posterior Lobe Pituitary Powder Intranasally. A. Marble, Boston.—p. 1131.
Deplorable Development in Economics of Radiation Therapy. F. E. Wheatley, Boston.—p. 1134.
Reconstruction of Vagina from Portion of Sigmoid: Report of Case. H. C. Pitts, Providence, R. I.—p. 1136.
Dr. William Beaumont. W. R. Steiner, Hartford, Conn.—p. 1137.

New Orleans Medical and Surgical Journal

88: 335-412 (Dec.) 1935

Hyperthyroidism. A. Street, Vicksburg, Miss.—p. 335.
Resection of Presacral Nerve for Relief of Pelvic Pain. F. Hagaman, Jackson, Miss.—p. 339.
Diagnosis and Treatment of Amebic Hepatic Abscess. M. DeBakey and A. Ochsner, New Orleans.—p. 347.
*Chronic Abdominal Discomfort in Children. J. Signorelli and H. Hosen, New Orleans.—p. 353.
Discussion of Etiology and Significance of Mydriasis. L. C. Davis, Greenville, Miss.—p. 357.
Comment on Foreign Bodies in Food and Air Passages. R. Harris, Jackson, Miss.—p. 359.
Congenital Hypertrophic Pyloric Stenosis. R. A. Strong, New Orleans.—p. 362.

Chronic Abdominal Discomfort in Children.—In attempting to ascribe a direct cause for chronic abdominal discomfort in children Signorelli and Hosen feel that the most logical conditions to be considered are mesenteric lymphadenitis, chronic appendicitis and the action of a heterogeneous intestinal flora. They observed twenty-five apparently healthy children between the ages of 5 and 12 years, complaining of chronic abdominal discomfort or pain, with anorexia, constipation and lassitude. The data suggested that the cases represent the results of pathologic changes of the mesenteric glands or that the symbiotic action of bacteria formed a heterogeneous intestinal flora. Therefore, theorizing along this line of thought, the authors undertook to apply empirically a procedure that would increase the hydrochloric acid of the stomach, hoping thus to strengthen the efficiency of the "gastric barrier," which exercises so considerable an influence over the formation of enlarged mesenteric glands, and the creation of a symbiosis of the organisms forming the intestinal flora. It appears reasonable that the addition of hydrochloric acid even to the normal stomach would hinder or entirely stop bacterial activity in these regions and overcome the symptom complex. Accordingly, despite the presence of normal acid values in the majority of the cases, dilute hydrochloric acid was prescribed in doses varying from 25 to 40 drops (1.6 to 2.5 cc.) three times a day, to be taken diluted with water at each meal. Marked improvement occurred, with relief of all symptoms except anorexia in four of the twenty-five cases. After one to two months of such treatment the acid was stopped. Many of the children have now been free of medication for as long as nine months without a recurrence of symptoms.

New York State Journal of Medicine, New York

35: 1063-1122 (Nov. 1) 1935

Surgery of Chest: Acute Empyema of Pleura. H. Lilienthal, New York.—p. 1063.
Id.: Nontuberculous Pulmonary Suppuration. C. Eggers, New York.—p. 1068.
Id.: Diagnosis and Surgical Treatment of Anterior and Posterior Mediastinal Tumors: Report of Case of Posterior Mediastinal Tumor. S. W. Harrington, Rochester, Minn.—p. 1073.
Id.: Surgery in Pulmonary Tuberculosis: Present Status. F. Berry, New York.—p. 1080.
Chronic Illness Due to Dietary Deficiency. M. L. Drazin, New York.—p. 1087.
Observations on Treatment of Mental Disorders in Small Groups. E. N. Boudreau, Syracuse.—p. 1095.
Rupture of Uterus During Curettage with Expulsion of Intestines: Case Report. R. F. Ward and H. A. Metz, New York.—p. 1100.
How Psychiatric Services Are Being Utilized by Schools of New York State. F. L. Patry, Albany.—p. 1101.

Public Health Reports, Washington, D. C.

50: 1639-1666 (Nov. 22) 1935

Further Studies of Effect of Radium on Bacteria. R. R. Spencer.—p. 1642.
Technic Which Completely Excludes Air Contamination of Bacterial Cultures. R. R. Spencer.—p. 1656.

50: 1667-1718 (Nov. 29) 1935

Influenza and Pneumonia Mortality in a Group of About Ninety-Five Cities in the United States During Four Minor Epidemics, 1930-1935, with a Summary for 1920-1935. S. D. Collins and Mary Gover.—p. 1668.

Radiology, Syracuse, N. Y.

25: 521-650 (Nov.) 1935

*Effects of Thorium Dioxide Sol (Thorotrast) on Human Liver. L. G. Rigler, R. Koucky and A. L. Abraham, Minneapolis.—p. 521.
Rib Defects Simulating Pulmonary Cavitation. C. Jones, Cleveland.—p. 533.
Retardation of Bone Growth Following Roentgen Irradiation of Extensive Nevocarcinoma of Skin in an Infant Four Months of Age. R. H. Stevens, Detroit.—p. 538.
Further Discussion of Relations of Antrum and Cap to Gallbladder as Factors in Emptying the Gallbladder. N. B. Newcomer and Elizabeth Newcomer, Denver.—p. 547.
Roentgenologic Aspects of Osteomyelitis of Skull. K. Kornblum and P. J. Hodes, Philadelphia.—p. 566.
Arthrokatadysis of Hip Joint: Report of Five Cases. D. H. Levinthal and I. Wolin, Chicago.—p. 580.
Some Lawsuits I Have Met and Some of the Lessons To Be Learned from Them. I. S. Trostler, Chicago.—p. 586.
Pulmonary Syphilis in Adults: Report of Case. W. W. Robinson, Memphis, Tenn.—p. 596.
Radiation Therapy of Female Pelvis for Benign Lesions: Report of Three Hundred and Ninety-Six Cases. V. M. Moore, Grand Rapids, Mich.—p. 600.
*Roentgen Examination of Intercondyloid Fossa of the Knee Joint. G. Danelius and L. F. Miller, Chicago.—p. 605.
Discrete Pulmonary Lesions, Roentgenologically Considered. J. M. Fruchter, Philadelphia.—p. 609.
Methods of Enhancing Roentgen-Ray Action. A. J. Delario, Paterson, N. J.—p. 617.

Effects of Colloidal Thorium Dioxide on Liver.—During the last three and a half years, Rigler and his co-workers used colloidal thorium dioxide in examining 175 patients, who were almost all suffering from malignant tumors. A high

incidence of liver metastases was found on roentgen examination by the method. Little or no harm can be demonstrated as yet from the use of the thorium in small doses in the roentgen examination of the liver and spleen in man. Nevertheless, caution should be exercised in its use because the eventual radioactivity of the material has not yet been determined; it is eliminated very slowly, if at all, so that a foreign body will remain in the liver and spleen, and the extension into the lymph nodes in greater concentration may produce atrophy of the lymphoid tissue, the eventual results of which cannot be predicted as yet. Necropsy in thirty-five cases revealed little or no damage to the liver that could be ascribed to the procedure of hepatolienography.

Intercondyloid Fossa of Knee Joint.—Danelius and Miller state that a roentgenogram taken in the usual manner does not permit the intercondyloid space of the knee joint to be seen, because the anterior portion of the intercondyloid part of the femur is superimposed on this space. Many times the spines of the tibia are partly covered by this portion of bone. In a special view, a normal knee reveals the space, semicircular in outline, with its edges smooth and regular; the spines of the tibia are always visible, and the articulating surfaces of the tibia and femur are seen as well as, or better than, on the ordinary anteroposterior view. The intercondyloid fossa can be visualized on a roentgenogram by a simple technic. As the roof of the intercondyloid fossa is tilted for 60 degrees, the knee joint is flexed for the same amount. It is advisable to use a lead sheet underneath the film in order to obliterate the back scatter. The central ray is directed exactly below the inferior tip of the patella and is perpendicular to the longitudinal axis of the tibia. A narrow conus should always be used. A number of typical pathologic conditions are best illustrated by this view, which should always be used when vague intra-articular disturbances are present. Pathologic changes if present are more sharply demonstrated. The visualization of calcified crucial ligaments, calcified interligamental bodies and erosion of the surfaces of the intercondyloid borders of the femur may aid in the differential diagnosis of internal derangement about the knee joint.

South Carolina Medical Assn. Journal, Greenville

31: 207-226 (Nov.) 1935

Subphrenic Abscess. G. T. Tyler Jr., Greenville.—p. 207.
Pentobarbital Sodium as an Obstetric Analgesic. J. D. Parker, Greenville.—p. 210.
Discussion of Some of the Fundamental Principles in Caring for a Patient with Acute Abdomen. S. E. Harmon, Columbia.—p. 212.
Artificial Pneumothorax. G. S. Clinkscales, Anderson.—p. 213.

Southwestern Medicine, Phoenix, Ariz.

19: 369-410 (Nov.) 1935

Surgical Treatment in Pulmonary Tuberculosis. F. P. Miller, El Paso, Texas.—p. 369.
*Severing Adhesions in Artificial Pneumothorax. S. R. King and H. A. Patterson, Fort Stanton, N. M.—p. 370.
Radiation Therapy in Various Surface Lesions. A. Soiland, Los Angeles.—p. 376.
The General Aspects of Surgery on Large Intestines. C. F. Dixon and G. A. Stevens, Rochester, Minn.—p. 378.
Acute Contagious Diseases from the Standpoint of the Pediatrician. A. J. Scott Jr., Los Angeles.—p. 382.
Avulsion of the Tibial Tubercle. S. R. King, Fort Stanton, N. M.—p. 388.
The Management of Peritonitis: Based on New Conceptions. J. A. Bargen and C. F. Dixon, Rochester, Minn.—p. 391.
Treatment of Deformities of Anterior Poliomyelitis. S. L. Haas, San Francisco.—p. 395.

Severing Adhesions in Artificial Pneumothorax.—King and Patterson severed adhesions by the closed intrapleural pneumolysis method in ten consecutive cases. The electrosurgical method was used. A stereoscopic examination was made in all cases in which artificial pneumothorax, after having been continued from three to six months, was unsuccessful because of pleural adhesions. If there was a possibility of these adhesions being severed, a thoracoscopic examination was advised. The preoperative preparation of the patient for the thoracoscopic examination and intrapleural pneumolysis is the same as for any major thoracic operation. One or two days before the operation a pneumothorax refill is given, and, if there is an appreciable amount of pleural fluid present, it is aspirated. One-fourth grain (0.016 Gm.) of morphine sulfate is given just before the patient is taken to the operating room. From the stereoscopic study a site, usually in the anterior axillary line in the fourth interspace, is selected for the introduction of the first trocar and bakelite cannula. The skin, intercostal tissues and pleura are infiltrated with a 1 per cent solution of procaine hydrochloride and a small skin incision is made through which the trocar and cannula are inserted. The thoracoscope is inserted through the cannula and the site for the introduction of the second cannula is determined. In the majority of the cases reported the second cannula was introduced at the lower angle of the scapula. After the electrode has been inserted through the anterior cannula, with the thoracoscope in the posterior cannula, and the proper approach to the adhesion obtained, the adhesion is coagulated and severed with the high frequency current. The authors have found that satisfactory results are obtained by setting the Bovie unit at 32 for coagulation and 52 for cutting. Following an operation each wound is closed with a deep suture of catgut and a small round pressure bandage is placed over the incision to prevent emphysema. The postoperative treatment is absolute bed rest with the side operated on up for from one to two days. Coughing is controlled with codeine or with morphine when necessary. A reading of the intrapleural pressure is taken during the first week following the operation and refills are given as indicated. An intrapleural pneumolysis is indicated in all cases in which unsatisfactory collapse has been obtained after from three to six months, in contracting fibrotic adhesions that are obliterating the pleural space, in cases that require a high positive pressure to maintain an adequate collapse, and when an early closure of the cavity is desired to prevent spread of the infection to other parts of the body. In the authors' cases no free bleeding was encountered during operation. In several cases slight oozing resulted, which was easily controlled with the coagulative current. The results obtained have been gratifying. The authors state that the procedure should be in more general use among those treating tuberculosis.

Surgery, Gynecology and Obstetrics, Chicago

61: 713-846 (Dec.) 1935

Free Transplantation of Skin: Evaluation of Methods. E. B. Potter, Ann Arbor, Mich.—p. 713.
*Biliary Dyssynergia: Physiologic Obstruction of Common Bile Duct. R. R. Best and N. F. Hicken, Omaha.—p. 721.
Practical Roentgen Pelvimetry: Comparison of Methods in One Hundred Cases. L. J. Friedman, L. M. Michels and A. F. Rossitto, New York.—p. 735.
Estrogenic Principle, Common Etiologic Factor of Endometrial Hyperplasia, Uterine Fibroids and Endometriomas. J. T. Witherspoon, New Orleans.—p. 743.
Histologic Studies of Endometrium During Various Phases of Menstrual Cycle. W. E. Herrell and A. C. Broders, Rochester, Minn.—p. 751.
Experimental Study of Effects of Constriction of Great Vessels of Heart. W. J. Kiser, Wichita, Kan.—p. 765.
*Reliable Method for Testing Sterility of Surgical Catgut Sutures. R. O. Clock, New York.—p. 789.
Perirenal and Peripelvic Fibrolipomatosis: Their Relation to Replacement Lipomatosis of Kidney. F. Lieberthal, Chicago.—p. 794.
Simple Seven Suture Method of Bilateral Uretero-Intestinal Implantation: Report of Twelve Cases. F. Hinman, San Francisco.—p. 802.
Arteriovenous Aneurysm of Superior Thyroid Artery and Vein. J. L. Ransohoff, Cincinnati.—p. 816.
*New Method of Reduction of Dislocations at Shoulder Joint. A. A. Zierold, Minneapolis.—p. 818.
Osteomas of Nasal Accessory Sinuses: Report of Case Illustrating Transcranial Approach to Orbital Structures. W. B. Hoover and G. Horrax, Boston.—p. 821.
*Useful Diagnostic Sign in Vertebral Injuries. R. Soto-Hall and K. O. Haldeman, San Francisco.—p. 827.
New Operative Procedure for Brachial Birth Palsy: Erb's Paralysis. B. H. Moore, Chicago.—p. 832.
Postoperative or Ventral Hernia: Method for Relief of Tension After Repair. A. R. Dickson, Battle Creek, Mich.—p. 836.

Biliary Dyssynergia.—By means of direct roentgenographic visualization of the biliary tract with radiopaque oils, Best and Hicken have been able to demonstrate in four patients that an increased tonus or spasticity of the choledochoduodenalsphincteric mechanism is capable of producing a mechanical obstruction, thus causing a retention of bile. The dyssynergia of the

common duct sphincter may be independent of, or associated with, a generalized infection of the biliary tract, the presence of stones, strictures, kinks or pancreatitis. The extirpation of the gallbladder, the removal of the stones, the division of the stricture and the drainage of the infected bile ducts do not always overcome the spasticity of the sphincter, for in some cases it persisted after these operative measures. Physiologic evidence indicates that the choledochoduodenalsphincteric mechanism has sufficient contractile force to prevent the flow of bile into the duodenum, thereby increasing the intraductal pressure and causing pain and discomfort. Such a concept offers a rational explanation for occurrence of "gallstone colic" in the absence of stones or infection and for the so-called hepatic neuralgia and accounts for the persistence of gallbladder distress in some cholecystectomized patients. A dyssynergia, or spastic dysfunction of the choledochal sphincter, provides an anatomic blockade of the common duct, resulting in a retention of bile. The stagnant bile becomes infected, and calculi are then precipitated. In such cases a cholecystectomy would not necessarily be curative, for, following the removal of the gallbladder, the intrinsic spasm of the common bile duct sphincter may continue. The four patients were studied by lipoiodine visualization for as long as thirty-three days following a cholecystectomy, and the sphincterismus still persisted. It is probable that the proper postoperative medical regimen, including those substances which relax the choledochal sphincter, such as atropine, magnesium sulfate or fats, would do much to correct the abnormal spasticity of the choledochal sphincter and thus tend to minimize the unsatisfactory results that sometimes follow cholecystectomies.

Testing Sterility of Surgical Catgut Sutures.—The bacteriologic test that Clock outlines is based primarily on the technic devised in 1926 by Benjamin White and successfully used by him for several years for testing the sterility of catgut sutures. It also embodies the essentials of the method proposed by Meleney and Chatfield. The efficiency and the reliability of the test have been demonstrated over a period of five consecutive years (1930-1934), during which time it has been applied in testing the sterility of 12,522 surgical sutures, comprising twenty-four foreign and twelve American brands, as well as several thousand experimental sutures. During this time the use of the test has successfully detected nonsterility of 62.5 per cent of twenty-four foreign brands and 50 per cent of twelve American brands, and it has made it possible to demonstrate the fallacy of chemical sterilization of catgut sutures by revealing nonsterility of the 334 experimental lots, which were subjected to the action of twenty-seven different chemical compounds under a wide variety of conditions.

Reduction of Dislocations at Shoulder Joint.—In reducing dislocations at the shoulder joint by Zierold's method the patient is placed on his back, the operator standing at his affected shoulder and facing his feet. The affected arm is then taken by the wrist and with the elbow extended is abducted to 90 degrees. The elbow of the operator is then placed against the patient's chest wall just below the axilla, and the palm of his hand engages the bend of the patient's elbow. Using the base of his palm as a fulcrum, the operator then further flexes the patient's arm at the elbow joint, thus making use of a powerful lever, which makes controlled traction on the dislocated humerus. The operator completes the maneuver by still further flexing the arm at the elbow and adducting the humerus to 45 degrees. At times it will be found that the operator's forearm is too short to provide adequate leverage and in this circumstance a pad of the necessary thickness is introduced between his elbow and the chest wall of the patient. The author has used this method for the last four or five years in the surgical service at the Minneapolis General Hospital and in his private practice. It has proved generally satisfactory and has not been attended by any unfortunate complications or results. He believes that the method has several advantages over the methods now in vogue: 1. It may be used in all cases of dislocation of the shoulder joint, even those complicated by fracture of the surgical neck, the tuberosity, or the shaft of the humerus or the glenoid fossa. 2. The maneuver may be employed without additional injury to the bone or soft tissue and, in fact, often aids in the reduction of the accompanying fractures. 3. No force is applied to the dome of the axilla and consequently there is no danger of injury to vessels or nerves such as often occurs when the foot is placed in the axilla. 4. The method requires no great expenditure of strength and affords powerful controlled traction without the help of an assistant or special apparatus. 5. The method may be used in many cases without anesthesia.

Diagnostic Sign in Vertebral Injuries.—For several years Soto-Hall and Haldeman have employed a maneuver that is extremely helpful in the diagnosis of vertebral injuries. The patient is placed flat on his back without pillows, and the examiner places one hand on the sternum of the patient, exerting a slight pressure so that no flexion can take place at either the lumbar or the dorsal region of the spine. At the same time the examiner's other hand is placed under the occiput and with this hand the head is bent on the neck; then slowly but forcibly the head and neck are flexed on the sternum. This produces a progressive pull on the posterior spinous ligaments, starting at the ligamentum nuchae and being transmitted downward to the interspinous ligaments until it reaches the spinous process of the injured vertebra. On this it acts as a lever, gently compressing the body and producing pain, which the patient localizes very accurately. The usefulness of the sign rests on the following facts: 1. It gives the exact location of recent fractures without moving or disturbing the patient. 2. It guides the technician in obtaining roentgenograms at the proper level. 3. It aids in the differentiation between the injury of bone and damage to soft tissue. 4. It is helpful in medicolegal cases because it does not attract the attention of the patient to the lesion and he is not aware of the area that is being tested. 5. A negative test almost eliminates the diagnosis of recent vertebral injury. 6. Confirmation of the clinical observations is given by experiments on rabbits.

Tennessee State Medical Assn. Journal, Nashville

28: 445-486 (Nov.) 1935

Management of Traumatic Cases: Preliminary Management of the Seriously Injured. D. Eve Jr., Nashville.—p. 445.
Id.: Brain Injuries: Their Management. T. D. McKinney, Nashville.—p. 449.
Id.: Fracture of Spine and Pelvis. R. W. Billington, Nashville.—p. 453.
Id.: Open Wounds Including Compound Fractures. C. F. Webb, Jackson.—p. 458.
Id.: Traumatic Shock. P. A. Perkins, Memphis.—p. 461.
*Treatment of Epidemic Meningitis. R. B. Wood, Knoxville.—p. 471.

Treatment of Epidemic Meningitis.—Wood analyzes 100 cases of epidemic meningitis occurring in Knoxville and treated at the General Hospital during the period 1930 to 1934 inclusive. What might be considered a mild epidemic occurred in 1931, at which time fifty cases were observed. Previous and subsequent to this the incidence of admissions corresponds closely to that of other general hospitals. A preponderance of males is noted during the epidemic, the proportion to females being about five to three. The mortality rate was noted to vary exceedingly. At the beginning of the epidemic the cases seemed very virulent, both in the charity and in private practice. The duration of time elapsing before treatment is instituted is an important factor in mortality rates. In ward cases the mortality rate in 1933 and 1934 was 68 per cent, while in private cases for the whole five-year period it was only 31.3 per cent. The mortality rate is more favorable in young adults and less favorable in the very young and particularly in the elderly. The mortality for all ages was 47 per cent: 50 per cent in patients less than 10 years of age, 41 per cent from 10 to 20, 50 per cent from 20 to 30, 56 per cent from 30 to 40. No patient recovered who was more than 40 years of age. The average hospital stay of the patients who recovered was 17.3 days. Complications, including spinal block, blindness, deafness and paralysis of muscles, developed in 18 per cent. The patients who recovered received an average of 50 cc. of serum in the first twenty-four hour period. The average patient in the mortality group received 41 cc. The average number of punctures was 7.8 per patient. Cisternal puncture was resorted to in only nine cases; one patient treated throughout by this method received eight

punctures. Because of the fact that a meningococcemia exists in the early stages of this disease, it is the author's custom to give serum twice daily for the first two days of treatment. At the same time, lumbar drainage is done once or twice daily, according to the severity of the case, and the fluid removed is replaced by serum. There is no doubt that considerable shock can be produced by too rapid and too much withdrawal of fluid. A preliminary opiate will be of much aid in combating shock, and frequently general anesthesia is indicated when there is extreme hyperesthesia or opisthotonos. Too much cannot be said with reference to the general nursing care. Adequate rest and fluid intake must be maintained.

West Virginia Medical Journal, Charleston

31: 533-580 (Dec.) 1935

Advances in Pneumothorax. G. H. Barksdale, Charleston.—p. 533.
Correlation of Physical and Roentgen Signs in Examination of Chest. A. V. Cadden, Hopemont.—p. 536.
Treatment and Prognosis of Nontuberculous Lung Abscess: Analysis of Twelve Cases. Sobisca S. Hall and H. V. Thomas, Fairmont. —p. 540.
Diagnosis of Intestinal Tuberculosis. D. Salkin, Hopemont.—p. 547.
Treatment of Laryngeal Tuberculosis. R. S. Wolfe, Elkins.—p. 552.
*Resection of Presacral Nerve in Attempt to Relieve Dysmenorrhea and Intractable Pelvic Pain. H. A. Bailey and J. E. Cannaday, Charleston.—p. 556.
Malaria in Northern West Virginia: Case Report. L. C. McGee, Elkins.—p. 563.

Resection of Presacral Nerve in Dysmenorrhea.—During the last two and a half years, Bailey and Cannaday resected the presacral nerve in fifty cases for the relief of dysmenorrhea and pelvic pain. The results in forty-seven cases are reported, insufficient time having elapsed to state the results obtained in the remaining three. There were seven cases of chronic pelvic pain associated with severe dysmenorrhea: six were completely relieved and one was unimproved. Of fourteen cases of chronic pelvic pain in which the pain was not noticeably increased during the menstrual periods, ten were completely relieved, two definitely improved and two unimproved. Of twenty cases of severe dysmenorrhea, eleven were completely relieved, five definitely improved and four unimproved. There were three cases of dyspareunia, one associated with constant pain: one was completely relieved and two were definitely improved. In one case of pelvic pain, following low abdominal operation, resection was done with complete relief. In one case, chronic pelvic pain and severe constipation were completely relieved. One patient with a cancer of the uterus with almost unendurable pain experienced complete relief. Fourteen patients had additional pelvic operations during the process of sympathetic neurectomy, and all who had remaining appendixes were relieved of them. There was one death in this series due to peritonitis. A description of the anatomy of the superior hypogastric plexus (presacral nerve) and its variations in appearance and structure are discussed. The agonizing pain so often associated with inoperable neoplasms in the pelvis in which no involvement of the bone and no blockage of the ureters are present can be completely relieved by extensive pelvic sympathectomy. The resection of the nerve does not interfere in any way with the function of the bladder, pregnancy or parturition. The functions or mechanisms of the female generative organs are not disturbed. It is not accompanied by any motor paralysis or sensory paralysis of the skin. Presacral neurectomy is preferable to chordotomy for the relief of intractable pelvic pain produced by inoperable malignant conditions in cases without involvement of the bone.

Wisconsin Medical Journal, Madison

34: 793-876 (Nov.) 1935

Controlling Our Destiny. E. H. Cary, Dallas, Texas.—p. 805.
Use of Human Convalescent Serum in Infectious Diseases. M. Hardgrove, Milwaukee.—p. 812.
Medicolegal Aspects of Alcoholism. F. L. Kozelka, Madison.—p. 816.
Diseases of the Colon. F. J. Hodges, Ann Arbor, Mich.—p. 821.
Clinical Conditions Associated with Congenital Anomalies of the Small Intestine. A. H. Montgomery, Chicago.—p. 826.
Management of Cataract in the Insane. V. A. Chapman, Milwaukee. —p. 831.
Urologic Surgery in Children. H. L. Kretschmer, Chicago.—p. 832.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

19: 593-640 (Nov.) 1935

Thyroid Carcinoma with Metastasis in Ciliary Body: Report of Case. H. C. Orr and I. L. Johnstone.—p. 593.
Atypical Retinitis Pigmentosa Associated with Obesity, Polydactyly, Hypogenitalism and Mental Retardation (the Laurence-Moon-Biedl Syndrome): Clinical and Genealogical Notes on Case. L. H. Savin. —p. 597.
Precise Origin of Corneal Pitting. H. Herbert.—p. 600.
Kinescopy: Objective and Subjective (Practical Kinescope S). S. Holth.—p. 603.
Rationalized Miracle in Medieval England. W. J. Rutherfurd.—p. 609.
Myopia and Nearwork. H. Lipschutz.—p. 611.
Ametropia and Sex. J. A. Wilson.—p. 613.

Journal of Pathology and Bacteriology, Edinburgh

41: 373-580 (Nov.) 1935

Value of Cytologic Examination of Milk for Detection of Mycobacterium Tuberculosis. S. T. Cowan and L. Maddocks.—p. 373.
*Histology and Pathogenesis of Bilateral Cortical Necrosis of Kidney in Pregnancy. S. De Navasquez.—p. 385.
Experimental and Idiopathic Siderosis in Cats. J. Taylor, D. Stiven and E. W. Reid.—p. 397.
Four Cases of Infective Endocarditis Due to Organisms Similar to Haemophilus Para-Influenzae, and One Case Due to a Pleomorphic Streptobacillus. C. H. Stuart-Harris, A. Q. Wells, A. B. Rosher, F. P. Mackie and G. S. Wilson.—p. 407.
Localization of Response to Estrogenic Compounds in Organs of Male Mice. H. Burrows.—p. 423.
Essential Neurotropism of Yellow Fever Virus. G. M. Findlay and Ruby O. Stern.—p. 431.
Serologic Relationships of Two Hundred and Fifty Strains of Bacillus Diphtheriae. J. F. Murray.—p. 439.
Further Observations on Types of Corynebacterium Diphtheriae. Helen A. Wright and May H. Christison, in collaboration with A. L. K. Rankin, R. C. M. Pearson and J. A. Cuthbert.—p. 447.
Massive Extramedullary Bone Marrow Formation in Case of Pernicious Anemia. A. Lyall.—p. 469.
Malignant Melanoma in Colored Races: Rôle of Trauma in Its Causation. T. F. Hewer.—p. 473.
Production of Reversed Passive Anaphylaxis in the Guinea-Pig. C. E. Kellett.—p. 479.
Study of Pneumococcic Allergy, Anaphylaxis and Immunity. D. Harley. —p. 491.
*Classification of Hemolytic Streptococci from Nose and Throat of Normal Human Beings by Means of Precipitin and Biochemical Tests. R. Hare.—p. 499.
Classification of Hemolytic Streptococci from Stools of Normal Pregnant Women and of Cases of Scarlet Fever by Means of Precipitin and Biochemical Tests. R. Hare and W. R. Maxted.—p. 513.
*Presence of Hemolytic and Other Streptococci on Human Skin. L. Colebrook, W. R. Maxted and A. M. Johns.—p. 521.
Reactions of Chorio-Allantoic Membrane of Chick to Certain Physical and Bacterial Agents. N. E. Goldsworthy and W. Moppett.—p. 529.
Factor in Malignant Tissues Which Increases Permeability of Dermis. E. Boyland and D. McClean.—p. 553.

Bilateral Cortical Necrosis of Kidney in Pregnancy.—De Navasquez investigated histologically twelve cases of bilateral cortical necrosis of pregnancy. No evidence of previous glomerular, tubular or vascular disease has been found. The kidneys previous to the onset of symmetrical cortical necrosis of pregnancy are histologically normal. The primary change is a diffuse necrosis of the wall of the peripheral intralobular arteries and their terminal branches. The resulting ischemia causes necrosis of the renal cortex. The so-called thrombosis consists of conglutination of blood cells without fibrin formation or organization and is a terminal event consequent on stasis. Anatomic and experimental evidence demonstrates the high functional specialization of the intralobular arteries. It is suggested that this factor renders these vessels more susceptible to circulating agents of a "toxic" nature; hence the localization of the vascular necrosis to the kidney.

Classification of Hemolytic Streptococci.—By means of the group precipitin reaction, Hare classified streptococci able to give β hemolysis on blood agar from the nose and throat of normal human beings. Only about one third of these strains belong to group A, the group into which the majority of strains from infections in man can be placed. He believes that his results confirm indirectly the observations of Smith, Paine, Courmont and Sédallian, and Colebrook on the etiology of

puerperal hemolytic streptococcic infections of the uterus, all of whom have brought forward convincing evidence of the transfer of infecting organisms from the nose or throat of some one in attendance in a large proportion of infected parturient women. It is possible that the same could be shown to apply to infections of wounds in civil or military life and to outbreaks of respiratory tract infection not traceable to the milk supply (Glover and Griffith). Now that a potentially pathogenic strain can be defined with some degree of precision and that such strains have a comparatively limited habitat in nature, control of hemolytic streptococcus infections is more practicable than was the case a few years ago.

Streptococci on Human Skin.—Colebrook and his associates did not find hemolytic streptococci of the kind usually associated with human puerperal infections (Lancefield's group A) on the perineal and perianal skin of 160 women attending an antepartum department, and the risk of such streptococci being conveyed to the genital tract from the feces is considered to be remote. Group A hemolytic streptococci were isolated from the hands of seven of 181 normal individuals (3.8 per cent). It seems probable that they were derived from the respiratory tract. Treatment of the mother's hands during labor by an antiseptic that persists on the skin for some hours is advocated. Nonhemolytic types of streptococci (chiefly Streptococcus viridans) were found on nearly all the hands investigated but not on the skin of the interscapular region.

Journal of State Medicine, London

43: 621-682 (Nov.) 1935

The Place of a Thoracic Surgical Unit in Tuberculosis Scheme. T. H. Sellors.—p. 621.
Value of Radiology in Diagnosis of Pulmonary Tuberculosis. S. C. Shanks.—p. 629.
Tonsil and Adenoid Removal in Children. A. B. Pavey-Smith.—p. 636.
Sedimentation Rate in Rheumatoid Arthritis. C. R. L. Orme.—p. 644.
Synovial Fluid in Chronic Arthritis. D. H. Collins.—p. 652.
Caloric Feeding of Infants. Dorothy G. E. Potter.—p. 658.
Welfare of Women in Industry. L. P. Lockhart.—p. 667.

Journal of Tropical Medicine and Hygiene, London

38: 277-288 (Nov. 15) 1935

Agglutination of Red Blood Corpuscles of Man, Animals and Birds by Salivary Glands of Anopheles Maculipennis. P. G. Shute.—p. 277.
Treatment of Diabetes Mellitus. S. Vatcher and M. Douglas.—p. 278.
Blackwater Fever in an Infant, Native of Nigeria: Case. S. Jackson. —p. 284.
Tropical Helmets: Brief Note. A. Castellani and G. Scotti.—p. 284.

Lancet, London

2: 1043-1100 (Nov. 9) 1935

The New Purpose of Medicine. G. Newman.—p. 1043.
Congenital and Recurrent Dislocation of the Patella Treated by Transplantation of Patellar Tendon. F. Forty.—p. 1046.
*Therapeutic Application of Phenylmercuric Salts: Observations on Use of Basic Phenylmercuric Nitrate in Gynecology. L. H. Biskind.—p. 1049.
Treatment of Carcinoma of Lower End of Esophagus. R. Mailer.—p. 1052.
*Hemochromatosis and Heredity. R. D. Lawrence.—p. 1055.

Therapeutic Use of Phenylmercuric Salts.—Biskind has previously used basic phenylmercuric nitrate in treating 100 cases of specific and nonspecific endocervicitis and associated conditions. The results showed an invariably favorable response in all the conditions encountered, both specific and nonspecific, except when Trichomonas vaginalis was the inciting agent. The character of the infection could be changed often by a single application. When complete and rapid clinical recovery was not attained there was enough improvement to allow of the successful use of adjuvant treatment. In effective concentrations, both as a local application (1:1,250) and as a douche (1:25,000), basic phenylmercuric nitrate was nontoxic and almost nonirritant to the vaginal mucous membrane, and it proved effective in the presence of tissues. When it was used persistently as a douche the patients did not develop symptoms of mercury poisoning, and the output of mercury in the urine was negligible. The author has subsequently used basic phenylmercuric nitrate in forty-one cases seen in the dispensary and twenty-two in private practice. The former comprise eleven cases of vaginitis in children (five gonorrheal and six due to a mixed infection, including one due to Bacillus coli), thirteen cases of Trichomonas vaginalis infection in adults, fourteen cases of endocervicitis (seven gonorrheal and seven nonspecific), one case of rectovaginal fistula, one case in which a slough followed vaginal hysterectomy, and one case of paracervical sinus with infection following cauterization. The latter group consisted of eleven cases of gonorrheal endocervicitis, two of trichomonas infection, four of nonspecific vaginitis, four of nonspecific endocervicitis, and one case of tineal infection involving the perineum and labia. The method of treatment in each of the conditions is given. Laboratory investigations on the utility of phenylmercuric salts, in particular basic phenylmercuric nitrate, indicate that these compounds combine with the highest bactericidal and fungicidal potency yet discovered for any class of compounds a relatively low toxicity for animals and for man.

Hemochromatosis and Heredity.—Lawrence describes a family of nine in which two brothers had hemochromatosis. Three other brothers and the mother, but none of the sisters, had some signs of the disease. The most widely accepted view of hemochromatosis is that it is a congenital disease, an inborn error of iron metabolism, a deposition of iron pigments in various tissues which has been going on from birth but accumulates sufficiently to cause disease only in middle age. If so, one would expect to find cases with a hereditary influence, and Sheldon has collected such evidence in five cases. A striking feature of the disease is an overwhelming preponderance in males, but few females being affected. In view of the pedigree of his patients the author suggests that the disease is hereditarily sex linked and is comparable with hemophilia in this respect. The patients of Frisch and Sheldon are suggestive of a sex-linked heredity. The author believes that his hypothesis has the merit of fitting in both with the apparently congenital nature of this inborn error of metabolism and with the overwhelmingly male preponderance.

Medical Journal of Australia, Sydney

2: 611-642 (Nov. 2) 1935

Treatment of Fractures: Historical Review. N. G. Sutton.—p. 611.
Acute Bone Infections Involving Joints. G. K. Smith.—p. 620.
Mechanical Artificial Respiration. H. W. Davies.—p. 623.

South African Medical Journal, Cape Town

9: 737-776 (Nov. 9) 1935

Our Land: Is Our Population Satisfactory? Acclimatization of Animals. P. J. du Toit.—p. 739.
Id.: Are We Making the Best of Our Future Citizens in South Africa from the Time of Conception? K. B. A. McNeil.—p. 741.
Cardiac Failure During Anesthesia. K. Bremer.—p. 755.
The Ai-Ais Hot Mineral Springs. J. Helman.—p. 755.

Journal of Oriental Medicine, Dairen, So. Manchuria

23: 37-60 (Oct.) 1935

The Bones of the Foot in Chinese. Y. Nakayama.—p. 37.
Coronary Artery of the Heart and Aortic Arch in the Chinese. K. Miyashita.—p. 44.
Atmospheric Pollution in Manchurian Cities. B. Tanaka.—p. 45.
Studies on Trichomonas Vaginalis Donné: IV. Resistance, Phagocytosis and Encystment of Trichomonas Vaginalis. K. Matsuda.—p. 47.
Subacute Lymphatic Leukemia: Case (Thymic Leukemia?). Y. Matsuura.—p. 48.
Examinations on Tubercle Bacillus of Fowl: I. Spread of Fowl Tuberculosis to Mukden, Manchukuo. H. Hiroki.—p. 49.
Id.: II. Morphologic and Biologic Properties. H. Hiroki.—p. 50.
Id.: III. Pathologic and Anatomic Changes of Fowl Tuberculosis and Pathogenicity of Fowl Tuberculosis Bacillus for Animals. H. Hiroki. —p. 51.
Bovine Tuberculosis: I. Spread of Bovine Tuberculosis in Manchukuo and Interesting So-Called "Eugonic Strain" of Bovine Tubercle Bacilli. H. Hiroki.—p. 52.
Susceptibility of the Manchurian Ground Squirrel (Citellus Mongolicus Ramosus Thomas) to Tuberculosis. H. Hiroki.—p. 53.
Acid-Fast Saprophytes Obtained from Human and Animal Tuberculous Examination Material. H. Hiroki.—p. 54.
Anthropologic Studies on Chinese. S. Takeya.—p. 55.
Clinical Observation on Endemic Goiter in Jehol. U. Takei, Koh, T. Sada, A. Kakinuma, T. Kakoh, K. Takehisa, M. Suzuki, Y. Suzuki, Yo, M. Onmyoji, N. Ito and Chi.—p. 57.
Infantile Spasmophilia: Case. Y. Morita.—p. 58.
Clinical Studies of Tuberculosis of Children in Manchukuo: Statistical Observations. Y. Yamaoka, M. Tanaka and C. W. Hsü.—p. 59.

Archives des Maladies de l'Appareil Digestif, Paris

25: 897-1008 (Nov.) 1935

Pseudotumor of Stomach in Course of Pernicious Anemia: Case. P. E. Weil and Benzaquen.—p. 897.
*Time Table of Gastric Secretion. M.-J. Demole.—p. 907.
Curve of Secretion of Gastric Ferments. M. Bruno da Costa.—p. 921.

Gastric Secretion.—Because of the difficulties in drawing conclusions from the usual gastric analysis, Demole examined the possibility of adopting as the important criterion the hour at which the secretion attains its maximum rather than the degree of acidity or the quantity secreted. He studied the curves of acidity thus given by the histamine test in 120 cases. The technic was as follows: After the injection of 1 cc. of 0.001 Gm. of histamine hydrochloride the stomach content was removed through an Einhorn sound every ten or fifteen minutes for from one to one and a half hours. Each specimen was examined for free acid, total acid and quantity of secretion. Only the first was used in the graphs. By this means he divided the secretion into three types: that with the maximal acidity within thirty minutes of the histamine injection (tachysecretion), that rising more or less rapidly in from twenty to forty minutes and maintaining this level (plateau form), and that attaining a maximal acidity forty-five minutes or later and decreasing soon after (bradysecretion). A table was made to determine whether these forms fitted with any clinical syndromes. It was readily demonstrable that a normal gastric function was compatible with any form of curve. Furthermore it was obvious that no curve was specific for any particular digestive disease. On the other hand a certain division of the cases was striking. Thus the gastric and duodenal ulcers did not excite acid secretion in the same manner, in that the hour of maximal secretion was usually later in the duodenal than in the gastric types. This was only a relative matter, but it seems to indicate that what difference there is is more distinct in the hour of maximal secretion than in the total rise of acidity.

Archives de Médecine et Pharmacie Navales, Paris

125: 339-542 (July-Aug.-Sept.) 1935

*New Method of Artificial Respiration. Héderer.—p. 371.
Roentgenologic Examination of Gallbladder by Opacity Methods. Négrié.—p. 381.
Study of Primary Tuberculous Infection in Navy. J. Quérangal des Essarts.—p. 411.
Analysis of Butters: Technic. Brisou.—p. 433.
Chemical Treatment of Boiler Water. Thévenot.—p. 453.

Method of Artificial Respiration.—Héderer proposes an improvement in artificial respiration by combining the expiratory movements of Schafer with a new inspiratory method. The procedure necessitates two operators. The new inspiratory maneuvers are performed by the operator kneeling at the head of the patient, who is lying in the usual Schafer position. He grasps both elbows of the subject and counting 4, 5, 6 (after the expiratory 1, 2, 3) he draws the elbows up toward the vertical by rapid traction and without displacing either the hands or the head of the subject. At the count of six he replaces the elbows. The total combination of expiratory and inspiratory movements takes about five seconds. This combination, the author believes, does much to preserve the physiologic advantages of the Schafer method but also corrects some of the disadvantages by including an active inspiratory maneuver.

Prensa Médica Argentina, Buenos Aires

22: 2247-2292 (Nov. 20) 1935. Partial Index

*Histamine in Diagnosis of Pulmonary Tuberculosis. C. A. Videla and C. Lamarque.—p. 2265.
Chronic Laryngitis and Gastro-Intestinal Toxemia: Case. G. F. Roldan Verges and A. Hernandez.—p. 2272.
Tuberculin by Oral Route in Diagnosis and Treatment of Tuberculosis. J. Pou.—p. 2275.

Histamine Test in Diagnosis of Pulmonary Tuberculosis.—Videla and Lamarque state that the subcutaneous injection of 1 cc. of a 1 per thousand histamine solution produces transient local and general reactions in patients both with and without pulmonary tuberculosis. In the latter, respiratory alterations do not appear. In the former the injection is followed within from three to five minutes by modifications of the vesicular murmur and the appearance, in the pathologic zones of the lung, of moist râles audible at auscultation (positive result of the test). The respiratory and cardiovascular changes produced by the test in tuberculous patients are transient. The test is harmless and of value as an aid in the diagnosis of pulmonary tuberculosis with slight auscultatory signs. It gave positive results in 90 per cent of the author's twenty cases.

Revista Españ. de las Enferm. del Ap. Digest., Madrid

1: 723-800 (Oct.) 1935

Hepatorenal Insufficiency and Gastro-Intestinal Disturbances. J. Atucha.—p. 723.
*Gastric Tuberculosis and Gastric Disturbances of Tuberculous Patients. A. Rodriguez Olleros and P. de la Viesca.—p. 745.
Repercussion of Diseases of Biliary Tract on Some Other Organs. H. G. Mogena.—p. 765.

Gastric Tuberculosis and Gastric Disturbances of Tuberculous Patients.—Rodriguez Olleros and de la Viesca state that gastric tuberculosis is rare but that gastric disturbances are frequently found in patients suffering from tuberculosis of organs other than the stomach, especially the lungs. The authors examined, at intervals, forty-four cases of pulmonary tuberculosis for gastric changes in the various forms of the disease by the following methods: determination of the gastric secretion in a fasting stomach, morphologic and bacteriologic examinations of the sediment of the gastric content, studies of the gastric secretion curves after administration of the Katsch and Kalk meal of contrast substance, tests of gastric insufflation by the Henning and Norpoth technic, chromoscopy, histamine test, roentgen examination of the gastric mucosa after its coating with a thin layer of the opaque substance and, in twenty-three cases, gastroscopy. The presence of gastritis was verified in nearly all cases. The type of gastritis in tuberculous patients is characterized by abundant secretion in a fasting stomach, large amount of cells in association with gram-negative flora in the sediment, especially in the gastric content of diminished acidity, dissociation of the chromoscopic functions (elimination of the dye) and the intensity of acidity of the gastric content and presence of fine furrows in the relief of the gastric mucosa, which are seen by the roentgenogram and which are due to malnutrition rather than to atrophy of the mucosa. The authors report a case in which, in a person aged 26 with residual tuberculosis of the lungs and of the peritoneum, an erroneous diagnosis of peptic ulcer was made on the strength of recurrent melenas, vomiting of blood and certain data of the roentgen examination. It was found by the study of the resected portion of the stomach that the hemorrhages originated in a follicular gastritis.

Archiv für klinische Chirurgie, Berlin

184: 1-190 (Nov. 18) 1935. Partial Index

Electrocoagulation of Gasserian Ganglion in Trigeminal Neuralgia. E. Hertel.—p. 1.
Predisposition of Persons with Dilated Veins in Lower Extremities to Thrombosis After Operation or Delivery. M. Mátyás.—p. 26.
Value of Beck's Method of Drilling in Delayed Union and in Pseudarthrosis. L. Frankenthal.—p. 30.
*Surgical Treatment of Cancer of Colon. F. Koch.—p. 39.
*Symptoms and Treatment of Tuberculosis of Epididymis. R. Herbst.—p. 56.

Surgical Treatment of Cancer of Colon.—Koch reports the results obtained in 116 cases of carcinoma of the colon in which operation was performed by O. Löfberg at the Malmö General Hospital between 1917 and 1931. Palpation of the tumor was possible in 48 per cent of the cases, while the correctness of the roentgenologic diagnosis was established in 75 per cent. Operation was possible in only 40 per cent of the cases. Primary resection was favored as the operation of choice and was carried out in forty-two cases. The immediate mortality was 16.6 per cent. Acute obstruction complicated 32.7 per cent of the 116 cases. Carlsbad salt and liquid petrolatum were administered immediately after the operation. The patients were able to leave the bed after two weeks. The average stay in the hospital was one month. A follow-up study established that 66 per cent of the cases in which radical operation was performed were free from recurrence after five years.

Tuberculosis of Epididymis.—Herbst states that, because of the variability in allergic properties of patients, the tuberculin reaction is not a reliable criterion in the diagnosis of

tuberculosis of the epididymis. The Oppenheim urethral reaction is valuable in a greater percentage of tuberculous cases than in the nontuberculous, although a negative response does not rule out tuberculosis. In the presence of genital tuberculosis, tubercle bacilli are excreted in the urine and can be demonstrated with certainty by the Löwenstein method of culture. Bacilluria was demonstrated in practically all their cases (one exception) of tuberculous epididymitis. The author therefore considers the Löwenstein culture method a procedure of positive diagnostic value. Jadassohn's and Wildbolz's supposition of the existence of tuberculosis without a tubercle finds support in the author's demonstration of the presence of tubercle bacilli in the urine. The Löwenstein method of taking cultures of urine may serve as an indicator for the simultaneous existence of a tuberculous process in the kidney, especially in cases in which the urine presents few pathologic elements for examination. Bacilluria is frequently observed in these atypical forms of renal tuberculosis. The author found that the bacilluria persisted long after epididymectomy. This suggests, besides the hematogenous spread, the possibility of an intracanalicular extension of the infection. Patients subjected to roentgen irradiation likewise excrete bacilli in the urine for a long time, even in the presence of improvement in the symptoms. A positive Löwenstein culture is an index of continuance of an active process. The author considers epididymectomy the operation of choice. Roentgen therapy consumes much time and is uncertain. The diseased prostate and seminal vesicles are treated conservatively.

Deutsches Archiv für klinische Medizin, Berlin

178: 217-340 (Nov. 14) 1935. Partial Index

*Significance of Hypophysis for Regulation of Blood Pressure: Demonstrated in Two Cases. E. Kylin.—p. 217.
Relation of Residual Nitrogen to Urea Nitrogen in Blood Serum. W. Nonnenbruch and J. Weiser.—p. 239.
*Congenital Paramyotonia. E. Schott.—p. 255.
*Hepatolienal Syndromes in Brucella Abortus Infection. F. Diehl and F. Roth.—p. 271.
Studies on Changes in Predisposition to Infections: Significance of Cholesterol and Lecithin for Immunity, Particularly for Phagocytosis. H. Horster and E. Dorbath.—p. 289.
Regulation of Blood Sugar and Heredity: Tolerance Tests on Forty Pairs of Twins. M. Werner.—p. 308.

The Hypophysis and the Blood Pressure.—Kylin directs attention to his efforts to differentiate from the large group of essential hypertension a subgroup in which a hyperfunction of a part of the hypophysis plays an important part. The menopausal is the main form of hypertension considered by the author to be caused by a hypophyseal disturbance. In addition to increased blood pressure these patients have a tendency to hyperglycemia and eventually to glycosuria, hyperuricemia, hyperpotassemia, hypocalcemia and increased basal metabolism. Moreover, there is a reduction in the epinephrine blood sugar curve, a considerable reduction in the hypoglycemic phase of the blood sugar curve following a dextrose tolerance test and a tendency to adiposity and articular disturbances. The author shows that the symptomatology of this form of hypertension, which develops especially following the menopause, largely resembles that of Cushing's basophil hyperpituitarism. He discusses a case of Cushing's disease, which presents a transitional form to the menopausal hypertension, and a case of basophil hypopituitarism or Simmonds' disease and shows that this case is in almost every respect the exact opposite of the case of Cushing's basophil hyperpituitarism. These two cases demonstrate the importance of the hypophysis for the blood pressure, in that basophil hyperpituitarism leads to hypertension, whereas basophil hypopituitarism produces hypotension.

Congenital Paramyotonia.—Schott describes his observations on a family in which five members have the characteristic symptoms of congenital paramyotonia (Thomsen's disease). When kept warm, the patients are free from symptoms. The movements of the hands are impaired only when the hands are cold. Mere dipping into cold water is frequently sufficient to produce impairment in the mobility. In one of the patients the feeling of cold and of tension begins at the hypothenar eminence of the little finger; in others it commences at the thenar eminence. The sensation of paralysis frequently spreads to the forearm and the upper part of the arm. After the member has become warm again, from fifteen to sixty minutes is required before grasping becomes possible. The mother of the family states that formerly she had this sensation of numbness also in the face and in the feet but that walking was never impaired. She observed the disorder quite early in her children; in her son, for instance, she observed a peculiarity in grasping at the age of 9 months. In examining the patients, the author found that the musculature shows changes that largely resemble those of Thomsen's disease. The mechanical irritability of the musculature is increased, but idiomuscular pad does not develop; on the contrary, the musculature shows longitudinal depressions. Disturbances in the electrical irritability differ individually. However, not only do individual differences play a part in the mechanical and electrical irritability but the season of the year and the temperature in which the tests are made are also determining factors. In members of the family who do not suffer from cold numbness the author observed changes indicative of impairment. For instance, some of them have an increased mechanical irritability of the musculature and others have isolated muscular atrophies with or without numbness. The electrocardiograms of members of this family showed a strongly positive T wave. The electrocardiograms greatly resemble those observed in patients with myotonic dystrophy. Since aminoacetic acid (glycine) has been recommended for the treatment of progressive muscular dystrophy, the author decided to try this treatment in one of his cases of congenital paramyotonia, but several months of treatment were of no avail; there was no change in the symptoms.

Hepatolienal Syndromes in Brucella Abortus Infection.—Diehl and Roth, though pointing out that hepatic and splenic swellings are quite frequent during the acute stage of Brucella abortus infection, concerned themselves rather with the hepatolienal syndromes that dominate the clinical picture of Brucella abortus when the usual symptoms of that disorder are absent. They give reports of five cases. In the first patient, who developed an enlargement of the liver and spleen a year after a febrile disease that was accompanied by severe sweating, prolonged jaundice and pains in the upper part of the abdomen, a pernicious anemia developed. The suspicion of the existence of a Brucella abortus infection was corroborated by positive agglutination and intracutaneous tests. The second patient, a veterinary, developed a febrile disease following an injury of the hand. Six months later he had hypertrophy of liver and spleen, mild polyglobulism and severe leukopenia. After three years a splenomegalic cirrhosis with varicose bleedings was detected and two years later the patient was in the terminal stage of a splenomegalic cirrhosis and died of varicose hemorrhages. During the terminal stage the etiologic diagnosis of splenomegalic cirrhosis in Brucella abortus infection was finally made. The usual diagnostic methods, the serologic reactions, had failed; however, the intracutaneous test with vaccine of Brucella abortus was strongly positive, and cultures of the ascites fluid yielded Brucella abortus organisms. The third patient had had an attack of jaundice four years before he contracted the Brucella abortus infection. Six months after the infection the patient showed the hepatolienal syndrome with enlarged liver and hard splenic tumor. The patient died in hepatic coma. The Brucella abortus infection had been detected by the agglutination test sixteen days after onset of the febrile disorder, and Brucella abortus organisms were detected in the patient's bile. The fourth and fifth patients had hepatic cirrhosis and precirrhotic splenic tumor. Positive cutaneous reactions were the only indication of the etiology of the disturbances. In evaluating the case histories the authors point out that it is noteworthy that a Brucella abortus infection may persist for five years; that is, much longer than has been assumed heretofore. They give their attention to the peculiar immunologic conditions in the case of prolonged persistence of the process. In an active process the antibodies may decrease to such an extent that a serologic diagnosis becomes impossible. In such cases the cutaneous test may be helpful or the culture of the organism may succeed. The authors express the opinion that Brucella abortus infection is chiefly a disease of the reticuloendothelial system and that the hepatolienal system is an important element of the reticulo-endothelial system and an important factor in the formation of the antibodies.

Münchener medizinische Wochenschrift, Munich

82: 1899-1940 (Nov. 29) 1935. Partial Index

Psoriasis Problem. O. Grütz.—p. 1899.
Articular Swellings Caused by Endocrine Disturbances. Ruth Beyer. —p. 1902.
*Factors M and N in Human Erythrocytes and Their Practical Significance. N. Blinov.—p. 1904.
Etiology and Therapy of Suppurating Ulcus Serpens of Cornea. H. Schmelzer.—p. 1906.
Therapeutic Resistance of Spirochetes in Animal Experiment. A. Feldt. —p. 1907.
Encephalitis in Varicella: Case. H. Zischinsky.—p. 1908.

Significance of Factors M and N in Erythrocytes.—Blinov reports the results of studies carried out in the blood transfusion institute of Leningrad on 763 persons. It was found that 32.3 per cent had factor M, 21.1 per cent factor N and 46.6 per cent factors M and N. He points out that these percentages are similar to those obtained by other investigators. Further tests were made on twenty-five human embryos aged between 6 and 10 weeks. It proved always possible to detect the factors. Factor M was detected in nine of the embryos, factor N in three, and both factors in thirteen. This indicates that the factors develop in the early stages of embryonal life. The author points out that factors M and N are of forensic importance in cases of disputed paternity. However, since the Leningrad institute has no material on this problem, he refrains from further discussion. He calls attention to the fact that a number of investigators insist that factors M and N must be given consideration in the case of repeated blood transfusions. They are of no importance in a first transfusion, since the human serum contains no corresponding antibodies. The author was able to prove this in observations on fifty-five primary transfusions. Theoretical reasoning makes it appear possible that complications might develop in the event of repeated transfusions of blood with factors that do not correspond. He investigated this problem in several patients who received repeated blood transfusions, but he was unable to find corroborating evidence.

Wiener klinische Wochenschrift, Vienna

48: 1471-1502 (Nov. 29) 1935. Partial Index

Roentgen Treatment of Intracranial Disturbances. M. Sgalitzer. —p. 1471.
*Reform of Early Clinical Diagnosis of Carcinoma of Uterine Cervix. Hinselmann.—p. 1478.
Case of Tuberculous Articular Rheumatism. B. Jochweds.—p. 1480.
*Diagnostic Palpation of Abdomen. A. Báron.—p. 1482.
Pharmacology of Coronary Circulation. A. Fröhlich.—p. 1483.
Trachoma and Paratrachoma. K. Lindner.—p. 1487.

Early Diagnosis of Carcinoma of Cervix.—Hinselmann stresses the necessity of colposcopy but deplores that it is rarely done in a satisfactory manner and that because of this the results have been negligible. To be sure, a careful colposcopic technic is not enough, clinical experience and a thorough histologic knowledge being indispensable for the proper estimation of the observations. In discussing the cell material of cervical carcinoma, the author stresses the importance of the atypical epithelium in the cervical mucous membrane, which is capable of forming horny tissue. He shows that there are two methods for the recognition of the atypical epithelium on the cervix: the first is Schiller's method of iodization, the second is the optic method, which is a further development of the examination with the speculum. He emphasizes that with the colposcope it is possible to recognize the atypical epithelium not only after cornification has taken place but also when only a few parakeratotic layers cover it, when only the superficial cells are slightly flattened and even in the absence of these changes. He shows that colposcopy and the iodine test are not meant to replace each other but should be combined. As far as the differentiation of the atypical epithelium is concerned, colposcopy is superior to the iodine test; nevertheless, in doubtful cases the author has resorted to it and would not like to dispense with it. He demonstrates the importance of colposcopy for the early diagnosis of cervical carcinoma with a case history.

Palpation of Abdomen.—Báron, in examining patients in whom chronic appendicitis was suspected, observed that the right psoas muscle was frequently sensitive to pressure. He attempted to improve the palpation of the psoas and found the following procedure most suitable: The patient is told to relax and to breathe deeply. The examiner places the second, third and fourth fingers of the right hand on Poupart's line in the direction of the psoas muscle and presses down slowly and carefully. The patient is told to raise the corresponding leg (with extended knee) until it forms an angle of about 45 degrees. If this is done, the palpating fingers readily localize the psoas muscle or the tense tendon of the minor psoas muscle. The counterpressure of the tense psoas muscle makes possible the palpation of the muscle, even in obese patients. First the sharp tendon of the minor psoas muscle is palpated, and then the fingers slide upward and in the median direction. Palpation is always done on both sides. The author studied this method on normal persons and on patients and reached the conclusion that the unpleasant sensations, which are elicited by pressure on the tense muscle and radiate toward the umbilicus or the lower back, are caused by the irritation of the peritoneum that covers this muscle. He thinks that from the standpoint of pain the psoas muscle and the covering peritoneums form a unit. He observed an abnormal sensitivity of the psoas and the covering peritoneum often but not always in apparently healthy persons. The pain was more often noticeable on the right side than on the left side. He thinks that it may be assumed that the greater exertion of the right leg or the neighborhood of a not entirely normal appendix is responsible for this. In sciatica, in myalgias of the sacrospinal and of the gluteal muscles and in so-called static rheumatic disturbances (arthroses) of the lumbar portion of the vertebral column or of the lumbosacral and ileosacral joints, the psoas and peritoneum are likewise frequently painful. Palpation elicits this pain frequently in chronic and during acute appendicitis. In the latter case, the sensitivity is always greatest on the right side. In acute cholecystitis and in some patients with a hypersensitive nervous system, for instance in patients with exophthalmic goiter, the symptom has likewise been observed. The author points out that an inflammation of an intraperitoneal organ may produce pain of the psoas and the covering peritoneum by way of a sensosensory reflex. This reflex is elicited in about 10 per cent of the cases of acute and chronic appendicitis. In case of sensitivity of the psoas and of the covering peritoneum on the right side, pressure on the left psoas and peritoneum elicits a pain in the right hypogastric region. This symptom resembles the Rowsing symptom and the author shows that the Rowsing symptom is a mechanical, whereas the sensosensory reflex described by him is a nervous, transmission of pain.

Zentralblatt für innere Medizin, Leipzig

56: 977-1008 (Nov. 30) 1935

*Clinical Investigations with Guttadiaphot Method, with Especial Consideration of Articular Disorders. O. Gulbin.—p. 978.

Clinical Studies with Guttadiaphot Method.—Gulbin made comparative tests with drops of blood and drops of serum. With the exception of complete disappearance of the green color in the second strip of absorbent paper and of a difference in the surface distribution and in the width of the multicolored edge, the guttadiaphot tests of the serum revealed no peculiarities. A differentiation into normal and pathologic cases was not possible on the basis of these slight changes. The author concluded from this that the serum does not determine the outcome of the guttadiaphot test but that the formed elements of the blood are indispensable for the reaction. The study of a number of serum guttadiaphots in the ultraviolet light revealed a peculiar yellowish green fluorescence of varying intensity on the edges of the drops of serum. However, a clinical classification proved impossible since there were no decided differences in the color and fluorescence of the serums from healthy persons and from patients. The author's observations with the guttadiaphot method corroborated largely the results reported in the literature, particularly the positive outcome in acute and chronic infections and in secondary anemias. The tests on sixty patients with articular disturbances gave the following results: A negative outcome indicates an articular disturbance of a static or of a degenerative nature. An

infectious, inflammatory articular process is indicated only if the test is repeatedly positive and if other acute or chronic infections can be excluded. Only one positive test or a suspected positive test does not permit a definite conclusion with regard to the type of the articular disorder. The author considers that the test is a valuable help in the diagnosis of articular disturbances.

Zentralblatt für Gynäkologie, Leipzig

59: 2833-2896 (Nov. 30) 1935. Partial Index

New Observations and Points of View Regarding Genital Tuberculosis. P. Caffier.—p. 2833.
Question of Peritoneal Generalization of Benign Ovarian Papillomas. F. Posatti.—p. 2864.
Restoration of Functioning Menstrual Canal. P. Strassmann.—p. 2872.
*Insulin Treatment of Menstrual Disturbances. B. Liegner.—p. 2883.
Lymphangioma of Uterus. E. Löffler.—p. 2888.

Insulin Treatment of Menstrual Disturbances.—Liegner agrees with Klaften that insulin treatment is especially helpful in emaciated women with menstrual disturbances, which may take the form of polymenorrhea, hypomenorrhea or hemorrhagic metropathy. In addition to extreme emaciation, these women exhibit hepatic and gastro-intestinal disturbances (that is, disturbances of the carbohydrate and fat metabolisms), retarded return to normal blood sugar values following sugar tolerance tests, a reduction in the basal metabolism in the presence of a normal or nearly normal specific dynamic protein quotient, and slightly increased blood sugar values. It has also been observed that diabetes is often found in the ancestry of these women; that is, their pancreatic deficiency is hereditary. In this connection the author points out that pancreatic deficiency becomes manifest in some as diabetes and in others in a more occult form, such as insular emaciation with its genital sequels. He reviews the clinical histories of two young women who had amenorrhea and were extremely emaciated and were subjected to insulin treatment. The treatment was begun with three daily injections of 5 units and was gradually increased to three daily injections of 20 units each. Every second day dextrose was given intravenously. This treatment was continued for four weeks and produced a considerable increase in weight, but the amenorrhea was not influenced. The insulin treatment was repeated at intervals of three months and finally was followed by menstruation, after an amenorrhea of several years' duration, which had proved refractory to treatment with ovarian and hypophyseal preparations.

Vrachebnoe Delo, Kharkov

18: 747-818 (Nov. 9) 1935. Partial Index

Anterior Hypophysis and Metabolism. O. A. Steppun and I. Barenblat.—p. 747.
Gas Infection Complications Following Injections. V. P. Petrov.—p. 759.
Thrombosis and Embolism. G. P. Zaitsev.—p. 761.
*Question of Subarachnoidal Hemorrhages. A. N. Zimin.—p. 764.
Symptomatology of Cerebrospinal Meningitis. Podkin, Troyanovskaya and V. V. Chernikov.—p. 769.

Subarachnoidal Hemorrhages.—According to Zimin, the clinical picture of a subarachnoidal hemorrhage is characterized by an apoplectiform onset, frequently with loss of consciousness or mental confusion, headaches, repeated vomiting, psychic and motor excitability, partial or generalized convulsions and at times delirious states. Disturbance of the higher psychic functions is frequently observed. Among the somatic symptoms noted are those caused by meningeal irritation, such as rigidity of the neck, positive Kernig or Brudzinski signs, slow pulse and pathologic reflexes. The cerebrospinal fluid is quite characteristic. It presents a bloody discoloration of varying intensity in the early cases. It is under increased pressure, and the sedimented blood shows no tendency to coagulation. There is a moderate pleocytosis and a faint albumin and globulin reaction. The temperature may be normal or slightly increased but is often subnormal. The author considers subarachnoidal hemorrhage an independent clinical entity presenting a characteristic clinical picture and a definite clinical course. Its etiology is not definitely established. Further light is to be sought in the bacteriologic study of the cerebrospinal fluid, the family and personal history of the patient, the study of epidemic factors pertaining to grip and to epidemic encephalitis, and careful postmortem studies of fatal cases. The treatment is symptomatic. The author wishes to emphasize the beneficial effect of spinal punctures with removal of from 6 to 15 cc. of the cerebrospinal fluid. The cases exhibit a tendency to recurrence and the prognosis must be guarded.

Hospitalstidende, Copenhagen

78: 1097-1124 (Oct. 22) 1935

*Investigations on Fingerprint as Constitutional Mark in Mental Diseases: C'cn. N. B. Møller.—p. 1097.
*Tumors in Kidney and Upper Urinary Tract (Hornified Squamous Epithelial Carcinoma). P. Freudenthal.—p. 1112.

Fingerprint as Constitutional Mark in Mental Diseases.—Møller asserts that there is a relation, so far demonstrable only within larger groups, between the tendency to psychosis and the fingerprint. In his investigations attention has been paid only to the type of the pattern itself without regard to differences, such as the detailed form of the pattern, the number of lines, the fineness of the lines and the pattern combinations in the ten fingers. He thinks that, when these considerations are included, examination of the fingerprint may be of practical importance in the diagnosis and prognosis of mental diseases.

Tumors in Kidney and Upper Urinary Tract (Hornified Squamous Epithelial Carcinoma).—Freudenthal emphasizes the importance of (1) immediate thorough examination of every case of hematuria, (2) immediate cystoscopy and possibly ureteral catheterization before the end of hematuria, (3) pyelography on the slightest suspicion of change of form or of concrement formation in the upper urinary tract, (4) examination of the urine not only with reference to the regular form elements but also with regard to cholesterol scales and particles of tissue, (5) cystoscopic examination for hornification of the mucous membrane and (6) attempt at radical ureterectomy in cases of suspected pelvic or ureteral papilloma or pelvic or ureteral carcinoma.

78: 1153-1180 (Nov. 5) 1935

*Experimental Investigations on Gastrogenic Anemias (in Dogs): III. Review of Personal Experimental Results up to the Present. S. Petri, A. S. Ohlsen and D. Bøggild.—p. 1153.
Os Tibiale Externum. E. Jensen.—p. 1167.
*Seasonal Variations in Incidence of Acute Leukosis. J. Engelbreth-Holm.—p. 1173.

Experimental Investigation of Gastrogenic Anemias.—The experiments of Petri and his associates in thirty-four dogs observed for one and a half years showed that three subchronic-chronic types of anemia could be produced: (1) a hypochromatic condition with tendency to polycythemia after excision of the pylorus and the Brunner gland section in the duodenum; (2) a simple, grave anemia developing rapidly, in marked cases fatal, after excision of the entire stomach and the Brunner gland section, and (3) a simple, moderate stationary anemia after (*a*) excision of the fundus and (*b*) excision of the pylorus and the entire duodenum. None of the anemias showed hyperchromia, megalocytosis or leukopenia. The cases are believed to be gastrogenic and a part, at least, to be wholly or partly due to the absence of specific antianemic function. In the three types there was more or less marked (mainly unspecific) reaction to iron but no noteworthy reaction to either stomach or liver preparations. In one dog, with almost normal blood values one year after operation, there developed in the succeeding six months, without general signs of illness, a tolerably grave anemia with hyperplasia of the bone marrow, hyperchromia and leukopenia.

Seasonal Variations in Acute Leukosis.—Engelbreth-Holm says that the susceptibility of grown chickens to leukosis varies strongly with the seasons, from about 40 per cent in October and November to about 80 per cent in April and May. Chicks are equally susceptible the year round. Analogously, there are marked seasonal variations in the incidence of acute leukosis in man. Of ninety-five cases in Copenhagen, 60 per cent of which were in men, about twice as many occurred in the summer as in the winter; this does not include children under the age of 15. The difference in frequency in men and women seems to be especially pronounced in patients under 10 and more than 40. According to this material acute leukosis occurs most often in childhood and after 50.